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PRELIMINARY BULLETIN  
KURILE ISLANDS EXPERIMENT  
OCEAN-BOTTOM SEISMOGRAPHIC EXPERIMENTS

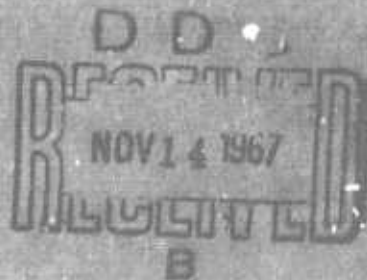
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## ABSTRACT

An Ocean-Bottom Seismograph (OBS) field experiment was conducted during the months of October, November, and December, 1966, in the Kurile Islands region. Data recorded by a total of 14 units are presented. Recorded during the experiment were 176 associated events, including 89 UCS&GS reported events, 70 OBS preliminary epicenters and 17 calibration explosions detonated during the experiment. In addition, 200 assumed associated events were determined with the number of stations per assumed event ranging from three to seven. These data are presented in standard bulletin format.





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### KURILE EXPERIMENT DATA

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## SECTION I

### INTRODUCTION AND SUMMARY

An ocean-bottom seismograph (OBS) field experiment was conducted during the months of October, November, and December, 1966, in the Kurile Islands region. Data were recorded by a total of 14 units. Seventeen calibration explosions were detonated during the experiment. Station and calibration explosion locations are presented in Figure I-1.

Analysis of the data revealed that 89 events reported by the United States Coast and Geodetic Survey were recorded by the network. The majority of the USC&GS events recorded were local or near regional events. Very few teleseismic arrivals from earthquakes distributed around the world were recorded by the network. Those teleseismic events that were recorded were, in general, located in a few selected regions and all had a computed magnitude (USC&GS) of 5.5 or larger.

Seventy OBS preliminary epicenters were determined from the data, bringing the total number of associated events recorded during the experiment to 176, including USC&GS epicenters and calibration explosions. In addition, 200 assumed associated events were determined with the number of stations per assumed event ranging from 3 to 7.

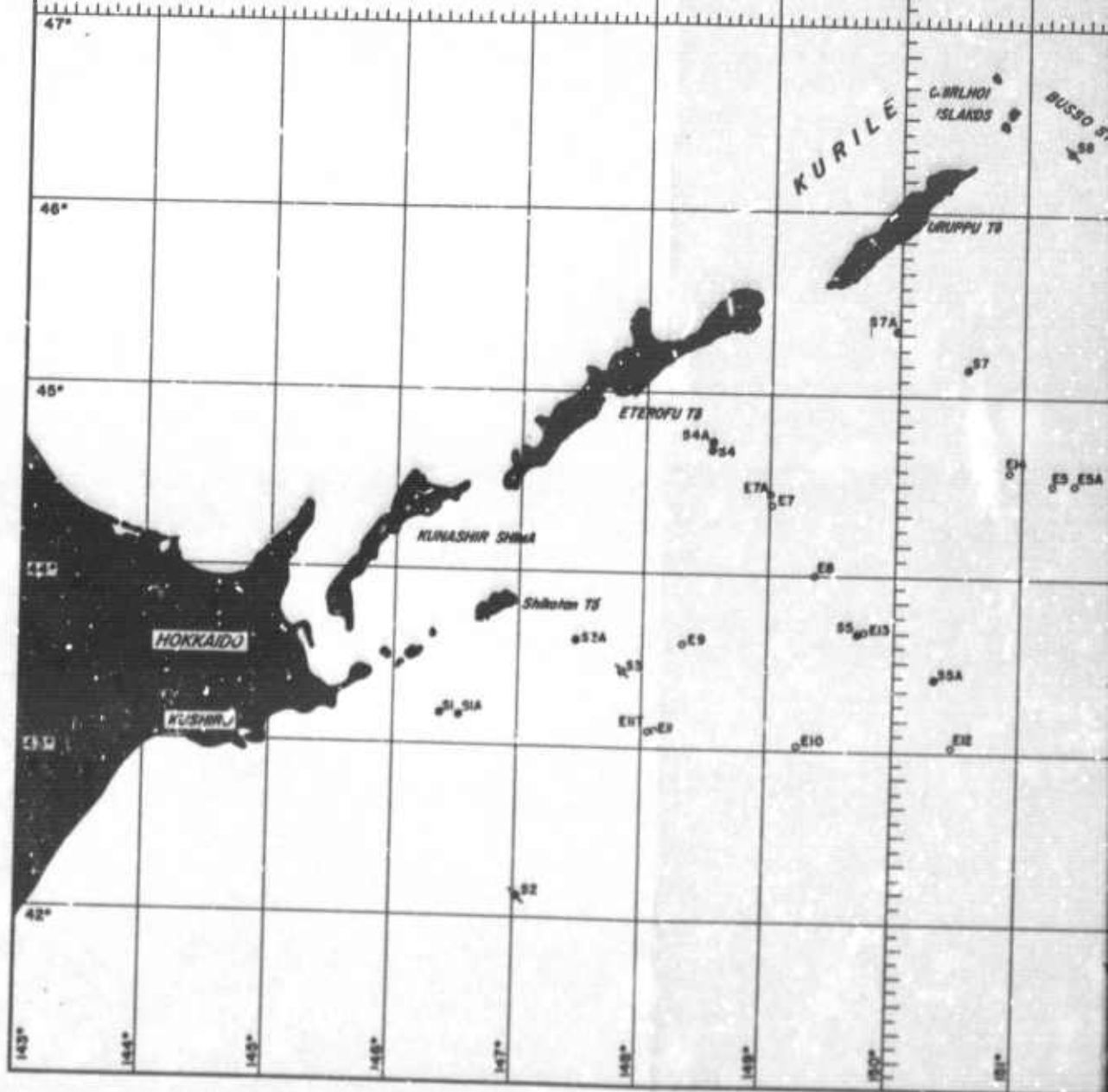
This report presents the preliminary bulletin produced from the data recorded by the ocean-bottom seismographs during the experiment. The data includes arrival times, phase types, phase periods, ground displacement, epicenter-to-station distances and azimuth, and residuals where possible. Individual station magnitudes were computed and, as expected, were larger than the magnitudes reported for the events. Due to insufficient time and the work necessary to conduct a satisfactory study of the individual magnitude calculations, magnitudes are not included in this bulletin.

# EVENT AND SYSTEM LOCATION CHART KURILE ISLANDS NORTH PACIFIC OCEAN

MERCATOR PROJECTION  
SCALE: Based on Lat. 52° 30'

## LEGEND:

- CALIBRATION EXPLOSION LOCATION
- SYSTEM LOCATION
- ✱ UNRECOVERED SYSTEM





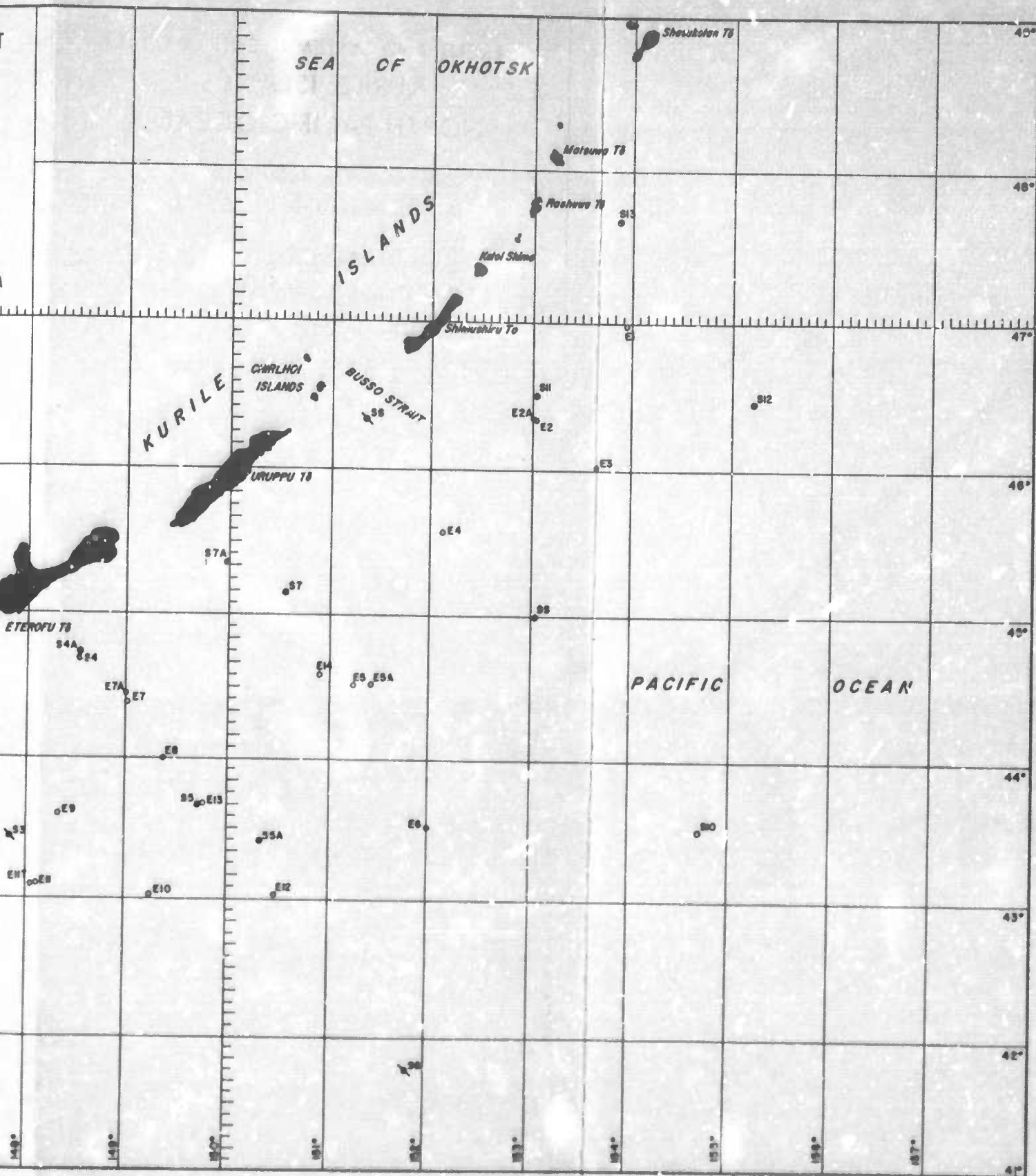


Figure I-1. Station and Calibration Explosion Locations

I-3/4



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## SECTION II

### FIELD OPERATIONS

The Kurile Islands Experiment field operations were conducted between 21 October 1966 and 16 December 1966. Field operations were accomplished using two vessels - the M/V Pacific Seal and the M/V Campeche Seal.

#### A. STATIONS

The Kurile Islands field experiment was divided into two phases, the first consisting of a drop of 13 instruments and the second consisting of a drop of 5 instruments. Station drop-times and location information is presented in Table II-1.

#### B. CALIBRATION EXPLOSIONS

An extensive calibration explosion program was conducted during the Kurile Islands experiment. Seventeen explosions were detonated, using from 1.0 to 5.2 tons of explosives in each detonation. The larger explosions were well recorded throughout the ocean-bottom network and hydro-acoustic waves from all shots were well recorded. Calibration explosion information is presented in Table II-2.

#### C. RECORDING PERIODS

Station drops were scheduled so that a minimum of five stations were recording data during most of the total recording period. Data were recorded by all stations with the exception of Station S5 which reached a depth greater than specifications resulting in an inoperative recorder. Recording periods of the ocean-bottom seismometers during the Kurile Experiment are presented in Figure II-1.



Table II-1  
KURILE EXPERIMENT OCEAN-BOTTOM SEISMOGRAPH STATION LOCATIONS

Station Position	Drop Date	Drop Time (z)	Unit Number	Apprx. Water Depth (fm)	Drop Location
S1	21 Oct	18:22	21	400	43°10.5'N, 146°20'E
S3	22 Oct	08:32	14	1900	43°26'N, 147°47'E
S5	23 Oct	02:37	15	4315	43°40'N, 149°40'E
S4	23 Oct	12:33	16	230	44°41'N, 148°29'E
S7	23 Oct	23:45	19	1500	45°08'N, 150°31'E
S9	24 Oct	11:53	20	3200	45°00'N, 153°00'E
S8	25 Oct	02:29	23	1750	46°19'N, 151°22'E
S11	25 Oct	10:30	22	1650	46°30'N, 153°00'E
S12	26 Oct	00:15	25	2850	46°28'N, 155°11'E
S13	26 Oct	11:21	24	1320	47°40'N, 153°50'E
S2	28 Oct	08:41	11	3300	42°07'N, 146°59'E
S6	6 Nov	17:41	12	2920	41°45'N, 151°46'E
S10	6 Nov	11:14	13	3000	43°38'N, 154°35'E
S7A	24 Nov	05:14	24	330	45°21'N, 149°56'E
S4A	24 Nov	21:00	10	230	44°43'N, 148°30'E
S3A	25 Nov	22:33	20	600	43°36'N, 147°25'E
S1A	27 Nov	04:22	19	900	43°10'N, 146°30'E
S5A	2 Dec	01:55	21	3100	43°25'N, 150°17'E





Table II-2  
CHARGE DETCNATION DATA

Pos. No.	Date (1900)	Operational		Charge Size (tons)	Charge Depth* (ft)	Water Depth* <sup>b</sup> (fm)	Detonation Time *** (GMT)	Observational		
		Lat. N	Long. E					Pressure *** Wave Arrival (GMT)	First Bottom *** Reflection (GMT)	Visicorder Record Quality
E11	5 Nov	43°06'	148°04'	1.0	315	2206 <sup>b</sup>	23:24:03.0	23:24:03.4	23:24:08.4	Fair
E9	6 Nov	43°35'	148°17'	1.0	315	2300 <sup>a</sup>	03:33:03.0	03:33:03.4	03:33:06.2	Poor
E10	7 Nov	43°01'	149°12'	1.0	313	3091 <sup>b</sup>	04:03:02.0	04:03:02.4	04:03:09.6	Very Good
E8	8 Nov	44°00'	149°20'	5.2	630	3018 <sup>b</sup>	01:50:02.9	01:50:03.4	01:50:10.2	Good
E7	8 Nov	44°23'	148°58'	1.0	315	2288 <sup>b</sup>	06:53:02.5	06:53:02.8	06:53:08.1	Poor
E5	9 Nov	44°31'	151°12'	5.2	600	4454 <sup>b</sup>	00:09:04.0	00:09:04.6	00:09:14.9	Poor
E6	9 Nov	43°31'	151°57'	5.2	570	2660 <sup>a</sup>	06:44:04.1	No Geophone	—	Fair
E4	9 Nov	45°35'	152°04'	5.2	540	2393 <sup>b</sup>	23:23:03.0	23:23:03.7	23:23:08.8	Good
E2	10 Nov	46°20'	153°00'	1.0	315	2215 <sup>a</sup>	06:25:04.0	No Geophone	—	Poor
E3	12 Nov	46°07'	153°32'	1.0	315	3130 <sup>a</sup>	05:55:03.9	No Geophone	—	Poor
E2A	12 Nov	46°21'	152°58'	5.2	510	1990 <sup>b</sup>	23:31:03.0	23:31:03.6	23:31:07.8	Poor
E1	13 Nov	46°59'	153°34'	5.2	680	1826 <sup>b</sup>	05:48:03.0	05:48:03.6	05:48:07.3	Good
E12	2 Dec	43°02'	150°25'	5.2	680	2702 <sup>b</sup>	22:20:02.8	22:30:03.4	22:30:09.3	Poor
E13	3 Dec	43°40'	149°42'	5.2	680	4388 <sup>b</sup>	05:21:02.9	05:21:03.4	05:21:13.6	Good
E7A	3 Dec	44°25'	148°58'	5.2	680	1417 <sup>b</sup>	22:49:03.1	22:49:03.6	22:49:06.4	Very Good
E14	4 Dec	44°35'	150°51'	5.2	630	3945 <sup>b</sup>	22:24:03.0	22:24:03.6	22:24:12.6	Good
E5A	5 Dec	44°31'	151°22'	1.5	630	4540 <sup>b</sup>	03:22:03.1	03:22:03.6	03:22:14.2	Fair

\* Depth values are determined from buoy line measurements, using a 20-ft track as a scale. A stretch factor characteristic of the nylon buoy line (15 ft for 1-ton charges with 300 ft of buoy line and 60 ft for 5.2-ton charges with 600 ft of buoy line) was taken into consideration. Current conditions had very little effect on depth measurements. It is estimated that the 1-ton charge depths are accurate to ±10 ft and the 5.2-ton charge depths to ±20 ft. In every case, measurements are made to the top of the charge.

\*\* Water depths are obtained from fathometer data and/or pressure wave travel-time computations with the method used indicated by an (fathometer data) or a b (travel-time computation).

\*\*\* Times representing arrivals of pressure waves received by a marine geophone (see Material Inventory, Appendix B, for description) and recorded on a Visicorder, are converted to GMT and are accurate to ±0.1 sec.



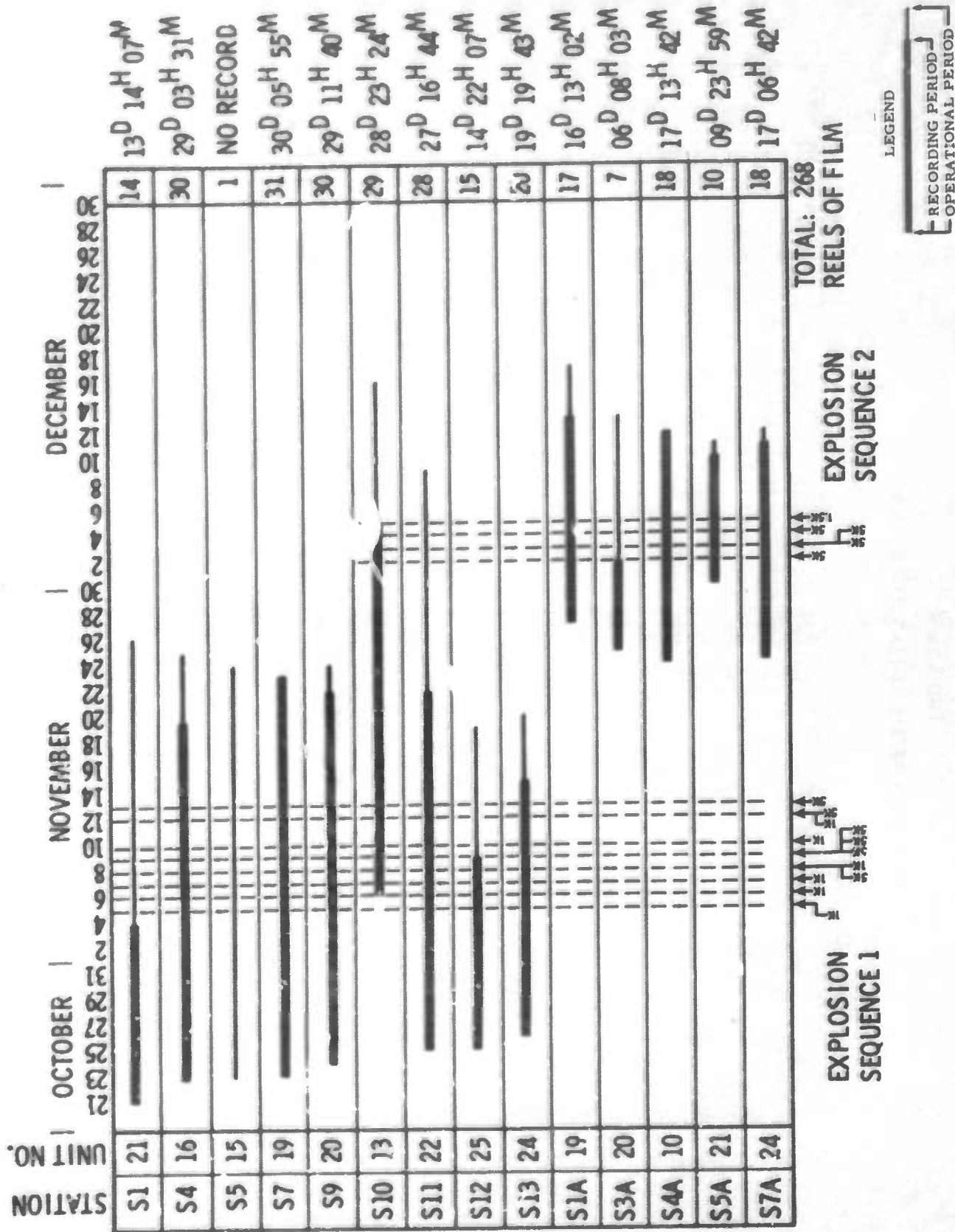


Figure II-1. Kurile Islands Experiment Instrument Recording Periods

### SECTION III

#### DATA HANDLING AND BULLETIN PREPARATION

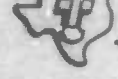
Magnetic tapes containing data recorded during the Kurile Islands Experiment were returned to Dallas upon completion of the experiment. Playback of the magnetic tape resulted in 268 reels of 16 mm film. The film data were analyzed by individual station and the phase data were punched on cards. All analysis was accomplished by three analysts to insure uniformity of measurements.

A computer program was written to convert the reduced arrival times (clock time) to Greenwich Civil Time (GCT). Resulting raw GCT times were corrected for tape recorder head-misalignment and clock drift. Output of the program was punched cards identical to the input data with the measured clock times replaced by the corrected GCT times.

The format of the reduced data cards was chosen for compatibility with a series of programs (Automated Bulletin Process or ABP) available at the Seismic Data Laboratory (SDL) in Alexandria, Virginia. The purpose of the programs is to take arrival time information in chronological order by station event. Phase associations are based on comparisons of observed arrival times with computed arrival times determined using epicenter and station locations and standard Jeffreys-Bullen travel times.

The complete list of epicenters reported by the United States Coast and Geodetic Survey in the Preliminary Epicenter Determination (PDE) cards covering the experiment recording period were included in the first ABP using the reduced data. The resulting output identified all arrivals tentatively associated with the list of epicenters.

Chronologically merged data which did not associate with the list of epicenters were studied to determine the feasibility of determining preliminary epicenters using OBS data alone. A large number of obviously



small local and near regional events were well recorded by the station network. Since most station events contained both P- and S-wave arrivals, a program was written to determine apparent origin times using the recorded S-P intervals. These estimated origin times were then compared station event by station event to determine station combinations which had apparently recorded the same event. Preliminary epicenter determinations were attempted using the LOCATE program developed by SDL. P-phase arrival times from the station events along with an estimated origin time and location were input to the program. The least squares technique is employed by the program in determining epicenters using Jeffreys-Bullen travel times as modified by Herrin.

USC&GS epicenters obviously not recorded by the ocean-bottom stations were deleted from the epicenter list. All preliminary OBS epicenters and calibration explosions were added to the epicenter list. The ABP was repeated to obtain the final output.

A program was written to print the output of the ABP in a format similar to that presented in the VELA UNIFORM Array Station and Long Range Seismic Measurements (LRSM) bulletins.



## SECTION IV

### BULLETIN INTERPRETATION

Data recorded during the Kure Islands Experiment is presented in the Appendix. The data are grouped into the following three categories:

- Associated station events
- Assumed associated station events
- Unassociated station events

Interpretation of the bulletin data is presented in two sections, epicenter data and phase data, with appropriate remarks for each category and subdivision.

#### A. EPICENTER DATA

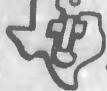
##### 1. USC&GS Epicenters

The first line of the epicenter data contains the following information:

- Date (GCT)
- Origin time (GCT)
- Latitude
- Longitude
- Geographic description of epicenter location

The second line of the epicenter data contains the following information:

- Depth (km)
- Magnitude (average  $m_b$ , Gutenberg and Richter, as



computed by the USC&GS using data from cooperating observatories. No magnitude is presented if a magnitude was not reported by the USC&GS)

## 2. OBS Preliminary Epicenters

OBS preliminary epicenter data is presented in a manner identical to the USC&GS epicenter data with the exception of the following:

- The geographic description of the epicenter location is replaced by "OBS PRELIMINARY EPICENTER" followed by the number of stations used to determine the preliminary epicenter
- No magnitude is presented for the OBS preliminary epicenters

## 3. Calibration Explosions

OBS calibration explosion data is presented in a manner identical to the USC&GS epicenter data with the exception of the following:

- The geographic description of the explosion location is replaced by "KURILE EXPLOSION"
- No magnitude is presented for the OBS calibration explosions

## B. PHASE DATA

The column heading appearing at the top of each page of the bulletin applies to phase data. The headings are defined as follows:

### 1. Associated Station Events

#### a. DAY



Day and month on which the arrival occurred (GCT).

The day and month are listed only when the station designator changes.

b. STA

Station designator. The locations of the stations are presented in Figure I-1 and Table II-1.

c. PHASE

Type of phase recorded at the station. Prefixes are defined as follows:

- An "I" preceding the phase type indicates a sharp or sudden beginning of the phase motion. Direction of first motion is indicated by a "+" (up) or "-" (down)
- An "E" preceding the phase type indicates an emergent phase motion
- An "I" or "E" alone indicates an unidentified phase arrival
- Phase types enclosed by parenthesis indicates a phase identification which is suspect
- Hydroacoustic wave arrivals from the calibration explosions are designated by a "T"

d. C

Component on which the phase arrival was observed and measured. Component designators are as follows:

Z - vertical seismometer





X - first horizontal seismometer

Y - second horizontal seismometer

P - pressure transducer

e. TIME

Phase arrival time (GCT). Arrival times are measured to the nearest one-tenth second on all components.

f. AMP

Phase amplitude (one-half peak-to-peak) in millimicrons ( $\mu$ ) or microns ( $\mu$ ) of ground displacement. The amplitudes have been corrected for instrument response and are presented to the nearest tenths of units. Amplitudes presented in microns are followed by a "U" after the tenths column. Amplitudes are measured from the largest pulse in the first few cycles when possible. Amplitudes reported as 999.9 indicate that the trace was "overdriven."

g. PER

Period of the phase in seconds. Phase periods are measured from the largest pulse in the first few cycles. Phases with amplitudes reported as 999.9 do not contain period measurements.

h. DIST

Distance from epicenter location to recording station. All distances are computed using geocentric coordinates and are reported to the nearest tenth of a degree.

i. AZI

Epicenter-to-station azimuth. All azimuths are clockwise from north and are reported to the nearest degree.





## j. RES

Phase arrival time residual. All residuals are observed minus computed times (using Jeffreys-Bullen travel-time tables) and are reported to the nearest tenth of a second.

### 2. Assumed Associated Station Events

Assumed associated station events are those where the phase arrival times and station locations indicated a strong possibility of being associated. Preliminary epicenters are not reported for these events because of either of the following:

- Insufficient number of arrival times - a minimum of four stations is needed for convergence of a preliminary epicenter.
- Divergence occurred during preliminary epicenter determination - epicentral distances and azimuthal distribution of stations prevented convergence of some preliminary epicenter determinations.

Assumed associated station event phase cards are presented in the format of the associated station events with the exception of the following:

- Epicenter-to-station distances are computed from S-P times when possible.
- The residual column contains an "\*" each time the station designator changes

### 3. Unassociated Station Events

Unassociated station event phase cards are presented in the format of the associated station events with the exception that the epicenter-to-station distances are computed from S-P times where possible.



APPENDIX

KURILE ISLANDS EXPERIMENT DATA

DAY	STA	PHASE	C	TIME	OMP	PER	DIST	AZI	RES
22OCT	S1	ES	X	3 15 55.0			5.7		
22OCT	S1	EP	Z	8 44 39.6	121.0	.2	4.8		
		ES	X	45 35.2			4.8		
22OCT	S1	EP	Z	9 48 55.1	161.3	.4	7		
22OCT	S1	EP	Z	10 39 55.4			1.2		
		ES	Y	40 10.7			1.2		
22OCT	S1	EP	Z	11 18 24.0			.8		
		ES	X	34.1			.8		

22OCT 12 47 18.2 55.2N 162.0E NEAR E CST OF KAMCHATKA  
H = 59 KM MAG = 5.4

22OCT	S1	EP	Z	12 50 52.6			15.8	35	-5.2
-------	----	----	---	------------	--	--	------	----	------

22OCT	S1	E	Z	12 53 38.6					
-------	----	---	---	------------	--	--	--	--	--

22OCT	S1	EP	Z	13 20 30.4	282.3	.6			
-------	----	----	---	------------	-------	----	--	--	--

22OCT	S1	E	Z	15 55 13.4					
-------	----	---	---	------------	--	--	--	--	--

22OCT	S1	E	Z	16 15 41.2					
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22OCT	S1	EP	Z	16 26 34.3			.5		
		ES	X	41.9			.5		

22OCT	S1	EP	Z	17 22 16.9	121.0	.2	.5		
		ES	X	22.8			.5		

22OCT 17 30 5.0 35.3N 141.3E NEAR E CST OF HONSHU, JAPAN  
H = 33 KM MAG = 4.5

22OCT	S1	EP	Z	17 32 8.1	80.6	.2	8.8	208	-4.3
		ES	X	33 40.2			8.8	208	-11.0



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
22OCT	S1	E	Z	17 40 45.9					
22OCT	S1	EP	Z	19 54 47.8			2.2		
		ES	X	59 14.3			2.2		
22OCT	S1	EP	Z	20 12 1.1			1.0		
		ES	X	14.2			1.0		
22OCT	S1	EP	Z	22 50 14.3			3.1		
		ES	X	53.2			3.1		
22OCT	S1	EP	Z	23 22 17.6			.5		
		ES	Y	25.1			.5		
23OCT	S1	EP	Z	0 29 22.1			1.7		
		ES	X	42.9			1.7		
23OCT	S1	EP	Z	0 34 19.2	80.1	.2	3.5		
		ES	X	39 .5			3.5		
23OCT	S1	E	Z	0 37 45.9					
23OCT	2 14	15.0	35.5N	139.1E	NP S. CST OF HONSHU, JAPAN H = 33 KM MAG = 4.2				
23OCT	S1	EP	Z	2 16 29.5	128.2	.6	9.5	219	-2.7
23OCT	S1	EP	Z	2 24 21.5			.7		
		ES	X	31.4			.7		
23OCT	S1	EP	Z	2 28 31.5			5.2		
		ES	X	29 31.5			5.2		
23OCT	S1	E	Z	3 37 46.9	201.6	.5	T		
23OCT	S1	E	Z	4 9 9.4					
23OCT	S1	E	X	4 26 9.5					
23OCT	S1	EP	Z	4 39 6.2			3.6		
		ES	X	48.2			3.6		
23OCT	S1	EP	Z	5 55 21.0	121.0	.3	2.2		
		ES	Y	47.1			2.2		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
23OCT	S1	E	Z	6 15 19.0					
23OCT	7	9	20.9	51.0N	159.2E	OFF E CST OF KAMCHATKA H = 38 KM MAG = 5.2			
23OCT	S1	EP	Z	7 12 5.0			11.7	44	-3.9
23OCT	S1	EP ES	Z Y	7 59 3.3 12.6	927.4	.3	.7 .7		
23OCT	S1	E	Y	8 11 9.5					
23OCT	S1	EP	Z	8 15 55.5					
23OCT	S1	EP ES	Z X	8 45 12.4 27.2			1.2 1.2		
23OCT	S1	EP ES	Z Y	9 32 54.5 33 19.9	80.6	.1	2.1 2.1		
23OCT	S1	E	X	10 11 19.9					
23OCT	S1	EP ES	Z X	10 58 10.1 18.1			.5 .5		
23OCT	S1	EP ES	Z Y	11 22 4.4 11.7			.5 .5		
23OCT	S1	E	Z	11 41 57.6					
23OCT	12	15	17.8	51.1N	159.2E	OFF E CST OF KAMCHATKA H = 33 KM MAG = 4.8			
23OCT	S1	EP ES	Z X	12 18 3.0 20 4.7			11.8 11.8	43 43	-3.8 -13.8
23OCT	S1	EP ES	Z ..	12 25 33.1 26 58.5			N N		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
23OCT	S1	E	X	14 3 47.1					
23OCT	S4	EP	Z	16 19 57.4			.6		
		ES	Y	20 6.5			.6		
23OCT	S1	E	X	18 17 54.3					
23OCT	S4	EP	Z	18 33 31.1			.6		
		ES	Y	39.5			.6		
23OCT	S1	EP	Z	18 35 30.7			1.6		
		ES	X	51.0			1.6		
23OCT	S4	EP	Z	20 23 50.1			2.2		
		ES	Y	24 16.3			2.2		
23OCT	S1	EP	Z	20 25 12.3			R		
		ES	X	26 57.8			R		
23OCT	S4	EP	Z	20 44 49.8	999.9				
23OCT	S1	EP	Z	20 45 16.4					
23OCT	S4	EP	Z	20 49 17.3			1.0		
		ES	Y	29.9			1.0		
23OCT	S4	EP	Z	21 43 10.1	999.9				
23OCT	S1	EP	Z	21 43 36.3	80.6	.1	2.8		
		ES	Y	44 9.6			2.8		
23OCT	S1	EP	Z	22 14 14.9			3.5		
		ES	X	56.0			3.5		
23OCT	S1	EP	Z	22 40 12.4			.5		
		ES	X	19.0			.5		
24OCT	S1	EP	Z	0 29 51.6					
24OCT	S	EP	Z	1 27 10.9	96.2	.1	2.2		*
		ES	Y	37.3			2.2		
24OCT	S7	EP	Z	1 27 24.3	32.1	.2	.6		*
		ES	X	32.7			.6		
24OCT	S1	EP	Z	1 27 41.9					*



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
24OCT	S7	EP	Z	1 47 20.8	80.1	.2	.5		
		ES	X	27.3			.5		
		E	X	48 54.7			.5		
24OCT	S4	EP	Z	1 47 45.8			1.3		
		ES	Y	48 1.9			1.3		
24OCT	S7	EP	Z	2 37 20.5	48.1	.2	.6		
		ES	X	29.0			.6		
24OCT	S1	EP	Z	2 49 2.2	121.0	.3	3.1		
		ES	X	39.0			3.1		
24OCT	S1	EP	Z	3 4 56.2			4.5		
		ES	X	5 48.4			4.5		
24OCT	S4	EP	Z	3 5 37.6	121.0	.2	1.2		
		ES	Y	52.7			1.2		
24OCT	S4	EP	Z	3 53 39.9	241.9	.2			
24OCT	S1	EP	Z	3 56 .7			.5		
		ES	X	12.7			.9		
24OCT	S7	EP	Z	5 1 29.1	48.1	.2	1.1		
		ES	X	43.7			1.1		
24OCT	S4	EP	Z	5 1 34.0	201.6	.3	1.3		
		ES	Y	50.7			1.3		
24OCT	S4	EP	Z	5 3 39.9	201.6	.3	1.1		
		ES	Y	54.6			1.1		
24OCT	S7	EP	Z	5 3 43.1	282.3	.1	.5		
		ES	X	50.1			.5		
24OCT	S7	E	Z	6 5 56.5					
24OCT	S7	E	Z	6 14 34.5					
24OCT	S4	EP	Z	6 31 9.9	161.3	.2	.6		
		ES	Y	18.6			.6		
24OCT	S1	EP	Z	9 1 27.1	362.9	.1	.5		
		ES	Y	34.4			.5		
24OCT	S4	EP	Z	9 17 25.9			.5		
		ES	Y	32.9			.5		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
24OCT	S4	EP	Z	9 20 4.6			.5		
		ES	Y	11.2			.5		
24OCT	S7	EP	Z	9 21 39.3			1.5		
		ES	X	58.0			1.5		
24OCT	S7	EP	Z	9 24 17.5			1.7		
		ES	X	38.7			1.7		
24OCT	S1	EP	Z	10 25 33.0					
24OCT	S1	EP	Z	10 35 4.1			2.1		
		ES	Y	29.8			2.1		
24OCT	S1	EP	Z	11 32 40.7	241.9	.3	2.3		*
		E	Y	51.3			2.3		
		ES	Y	33 9.7			2.3		
24OCT	S4	EP	Z	11 33 3.9			4.1		*
		ES	Y	51.7			4.1		
24OCT	S7	E	Z	11 33 20.7					*
24OCT	S7	E	Z	11 34 23.7					
24OCT	S7	E	Z	12 10 10.9					
24OCT	S7	EP	Z	12 28 6.4			2.0		
		ES	X	30.8			2.0		
24OCT	S1	EP	Z	12 28 43.3	32.1	.1	4.6		
		ES	Y	29 36.6			4.6		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
24 OCT 13 53 44.5 54.9N 165.8E KOMANDORSKY IS REGION									
H = 33 KM MAG = 4.9									
24 OCT	S9	EP	Z	13 56 43.2	282.3	.2	12.9	35	-4.4
		E	Y	58 54.5			12.9	35	
24 OCT	S7	EP	Z	13 56 53.8	80.6	.1	13.8	40	-6.5
		E	X	57 7.7			13.8	40	
		E	X	59 17.0			13.8	40	
24 OCT	S4	EP	Z	13 57 13.5			15.1	41	-3.6
		E	Y	38.8			15.1	41	
24 OCT	S1	EP	Z	13 57 42.7			17.3	40	-1.9

24 OCT	S9	E	Y	14 10 .8					
24 OCT	S4	EP	Z	14 28 44.4					
24 OCT	S1	EP	Z	14 37 44.1	121.0	.3	.5		
		ES	Y	51.3			.5		
24 OCT	S1	EP	Z	14 58 25.2	80.1	.3	1.1		
		ES	Y	39.9			1.1		
24 OCT	S4	EP	Z	14 58 51.9			2.8		
		ES	Y	59 25.3			2.8		

24 OCT 15 0 16.0 51.2N 159.3E OFF E CST OF KAMCHATKA  
H = 33 KM MAG = 4.1

24 OCT	S9	EP	Z	15 1 58.4	725.8	.2	7.5	32	-7.3
		E	Y	3 13.3			7.5	32	
		E	Z	9 16.9			7.5	32	
24 OCT	S4	EP	Z	15 2 33.2			9.8	44	-3.7
		ES	Y	4 13.3			9.8	44	-13.0

24 OCT	S4	EP	Z	16 10 9.7					
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24 OCT	S1	ES	X	16 12 20.8					
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24 OCT	S1	EP	Z	17 0 17.3	80.1	.2	4.0		
		ES	X	1 4.4			4.0		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
24OCT	S4	EP	Z	17 0	35.0		1.8		
		ES	Y		57.3		1.8		
24OCT	S4	EP	Z	17 4	53.8	121.0	.1	.6	
		ES	Y	5	2.8		.6		
24OCT	S1	EP	Z	17 49	39.1		1.2		
		ES	X		54.4		1.2		
24OCT	S9	EP	Z	20 0	12.7	121.0	.2	1.0	
		ES	Y		26.3		1.0		
24OCT	S9	EP	Z	20 1	22.8		.5		
		ES	Y		29.7		.5		
24OCT	S7	EP	X	20 14	39.0		1.9		
		ES	X	15	2.7		1.9		
24OCT	S1	EP	Z	20 50	45.7	48.1	.2	2.7	
		ES	Y	51	17.7		2.7		
24OCT	S4	EP	Z	20 54	25.6	121.0	.2	.8	
		ES	Y		36.2		.8		
24OCT	S1	EP	Z	20 54	41.4	80.1	.1	1.8	
		ES	Y	55	3.4		1.8		
24OCT	S4	EP	Z	20 59	37.4	121.0	.2	.7	
		ES	Y		47.5		.7		
24OCT	S1	EP	Z	20 59	49.1		1.3		
		ES	X	21 0	5.9		1.3		
24OCT	S9	EP	Z	21 28	20.1	241.9	.2	R	
		ES	Y	29	35.8		R		
24OCT	S7	EP	Z	22 5	39.8		.8		
		ES	X		50.5		.8		
24OCT	S7	EP	Z	22 15	20.8		.5		
		ES	X		28.6		.5		
24OCT	S1	EP	Z	23 16	4.6	32.1	.1	.8	
		ES	X		15.7		.8		
25OCT	S4	EP	Z	0 7	57.4		1.2		
		ES	Y	8	12.4		1.2		
25OCT	S1	EP	Z	1 35	57.4		.7		
		ES	X	36	6.8		.7		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
25OCT	S9	EP	Z	1 36 35.3	80.6	.2	.9		
		ES	Y	45.3			.9		
		E	Y	37 40.1			.9		
25OCT	2	7	37.0	32.2N	142.2E	S OF HONSHU, JAPAN			
					H = 33 KM	MAG = 4.4			
25OCT	S1	EP	Z	2 10 15.9			11.4	198	-4.9
		ES	X	12 15.8			11.4	198	-12.6
25OCT	S7	E	Z	2 13 23.5			14.4	210	
25OCT	S9	E	Y	2 13 42.3			15.3	217	
25OCT	S1	EP	Z	3 1 39.1			3.4		
		ES	X	2 18.4			3.4		
25OCT	S7	EP	Z	3 16 13.3	64.1	.1	.5		
		ES	X	20.5			.5		
25OCT	S7	EP	Z	3 17 47.9	201.6	.1	.5		
		ES	X	53.8			.5		
25OCT	S1	EP	Z	3 23 14.4	201.6	.3	4.0		
		ES	Y	24 .4			4.0		
25OCT	S4	EP	Z	3 23 39.8	80.1	.2	R		
		ES	Y	24 46.0			R		
25OCT	S7	EP	Z	3 23 57.6			R		
		ES	Z	25 19.7			R		
25OCT	S4	EP	Z	3 39 13.3			.6		*
		ES	Y	22.4			.6		
25OCT	S7	EP	Z	3 39 27.0			1.3		*
		ES	Z	43.0			1.3		
25OCT	S1	EP	Z	3 39 30.6			1.7		*
		ES	X	51.4			1.7		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	REC
25 OCT	S7	EP	Z	3 48 24.6	201.6	.1	.5		
		ES	X	31.7			.5		
25 OCT	S1	EP	Z	4 10 1.6			1.6		
		ES	X	21.4			1.6		
25 OCT	S1	EP	Z	4 27 21.5					
25 OCT	S4	EP	Z	4 35 28.6	241.9	.2	.5		
		ES	Y	35.2			.5		
25 OCT	S7	EP	Z	5 58 29.2	443.5	.2	1.0		*
		ES	X	42.1			1.0		
25 OCT	S4	EP	Z	5 58 34.8			1.1		*
		ES	Y	48.9			1.1		
25 OCT	S1	EP	Z	5 59 8.8			2.9		*
		ES	Y	42.9			2.9		
25 OCT	S7	EP	Z	6 36 33.0	201.6	.2	.5		
		ES	X	39.1			.5		
25 OCT	S4	EP	Z	6 36 39.0			.9		
		ES	Y	51.3			.9		
25 OCT	S9	EP	Z	8 31 53.7	362.9	.2	.3		
		ES	Y	57.3			.3		
25 OCT	10	8	24.0	35.4N 139.1E	N S CST OF HONSHU, JAPAN				
					H = 42 KM		MAG = 4.1		
25 OCT	S1	EP	Z	10 10 39.6	48.1	.2	9.6	218	-2.5
		ES	Y	12 22.3			9.6	218	-7.1
25 OCT	S1	EP	Z	10 16 47.4			.5		
		ES	Y	54.7			.5		
25 OCT	S1	EP	Z	11 20 55.4	201.6	.1	.5		
		ES	Y	21 1.2			.5		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	Azi	RES
25OCT	S1	EP	Z	11 38 25.7					
25OCT	S4	EP	Z	12 20 44.1			.5		
		ES	Y	51.1			.5		
25OCT	S4	EP	Z	12 40 20.8			.8		
		ES	Y	31.7			.8		
25OCT	S1	EP	Z	12 40 31.4			1.5		
		ES	X	49.7			1.5		
25OCT	S11	E	Z	14 26 26.1					
25OCT	S1	EP	Z	14 29 11.1			1.5		
		ES	Y	30.1			1.5		
25OCT	S11	E	Z	14 36 23.7					
25OCT	S11	EP	Z	14 51 26.3			.5		
		ES	Z	33.2			.5		
25OCT	S4	EP	Z	15 14 6.9			.5		
		ES	Y	14.1			.5		
25OCT	S4	EP	Z	15 19 41.9			.5		
		ES	Y	48.1			.5		
25OCT	S7	EP	Z	15 21 56.4			.4		
		ES	X	22 1.6			.4		
25OCT	S1	EP	Z	16 41 33.1	1.9U	.2	3.8		*
		ES	Y	42 17.2			3.8		
25OCT	S4	-IP	Z	16 41 56.3	725.8	.3	R		*
		ES	Y	42 58.0			R		
25OCT	S7	EP	Z	16 42 14.0	161.3	.2	N		*
		ES	X	43 32.0			N		
25OCT	S9	EP	Z	16 42 36.6	201.6	.2	R		*
		ES	Y	44 7.3			R		
25OCT	S11	EP	Z	16 42 43.4			R		*
		ES	Z	44 21.5			R		
25OCT	S11	EP	Z	17 17 42.0					



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
25 OCT	18	4	11.8	36.8N 138.2E	HONSHU, JAPAN				
					H = 20 KM		MAG = 5.2		
25 OCT	S1	EP	Z	18 6 21.5	282.3	.7	8.9	227	-0.1
		E	Z	35.0			8.9	227	
		ES	X	8 15.5			8.9	227	13.4
25 OCT	S7	EP	Z	18 7 2.7			12.5	232	-7.6
25 OCT	S7	E	Z	18 9 33.7					
25 OCT	S1	EP	Z	18 48 55.4					
25 OCT	S1	EP	Z	19 0 18.1			3.6		*
		ES	Y	1 .4			3.6		
25 OCT	S7	EP	Z	19 0 25.8	64.1	.2	1.8		*
		ES	X	48.3			1.8		
25 OCT	S9	EP	Z	19 0 26.4	80.6	.2	.8		*
		ES	Y	37.3			.8		
25 OCT	S11	EP	Z	19 0 36.5					*
25 OCT	S1	EP	Z	19 12 42.4					
25 OCT	S1	EP	Z	19 24 14.1	96.2	.3	R		
		ES	X	26 7.3			R		
25 OCT	S7	EP	P	19 28 58.1			5.0		
		ES	X	29 55.5			5.0		
25 OCT	S7	EP	Z	19 41 16.8			.8		
		ES	X	28.2			.8		
25 OCT	S11	EP	Z	20 5 46.1					
25 OCT	S9	EP	Z	20 5 59.1	161.3	.2	.8		
		ES	Y	6 9.5			.8		
25 OCT	S7	EP	Z	21 9 22.8			.5		
		ES	X	30.6			.5		
25 OCT	S1	EP	Z	21 34 20.6			1.8		
		ES	X	42.4			1.8		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
25 OCT	S1	+IP	Z	23 9 47.5	1.20	.2	.5		
		ES	X	53.8			.5		
25 OCT	S4	EP	Z	23 10 12.4			3.5		
		ES	Y	55.3			3.5		
25 OCT	S11	EP	Z	23 11 40.0				R	*
		ES	Z	12 47.8				R	
25 OCT	S9	EP	Z	23 11 56.2	483.9	.3	1.2		*
		ES	Y	12 11.3			1.2		
25 OCT	S4	EP	Z	23 12 6.9				R	*
		ES	Y	13 33.0				R	
25 OCT	S1	EP	Z	23 12 29.0	161.3	.4		R	*
		ES	X	14 13.0				R	
25 OCT	S4	EP	Z	23 36 14.9			1.0		
		ES	Y	28.0			1.0		
26 OCT	S1	EP	Z	0 4 31.1			.6		
		ES	X	39.3			.6		
26 OCT	S4	EP	Z	0 12 6.5			.6		
		ES	Y	15.3			.6		
26 OCT	S7	EP	Z	0 12 9.4	64.1	.2	1.1		
		ES	X	23.5			1.1		
26 OCT	S1	EP	Z	0 35 16.3	403.2	.3	1.1		
		ES	X	30.1			1.1		
26 OCT	S7	EP	Z	0 35 25.8	64.1	.2	5.4		
		ES	X	36 27.9			5.4		
26 OCT	S4	EP	Z	0 35 27.7			2.4		
		ES	Y	56.1			2.4		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
26 OCT	S1	EP	Z	1 20 37.0	564.5	.4	3.9		*
		ES	X	21 22.6			3.9		*
26 OCT	S4	EP	Z	1 21 3.3			R		*
		ES	Y	22 8.0			R		*
26 OCT	S7	EP	Z	1 21 24.0			N		*
		ES	X	22 41.3			N		*
26 OCT	S9	EP	Z	1 21 32.3	80.6	.2	N		*
		ES	Y	23 14.5			N		*
26 OCT	S9	E	Y	1 30 30.2					
26 OCT	S4	EP	P	1 52 2.9			.5		
		ES	Y	9.8			.5		
26 OCT	S7	EP	Z	1 52 16.0			1.7		
		ES	X	37.2			1.7		
26 OCT	S1	EP	Z	2 4 20.4	121.0	.2	1.0		
		ES	X	41.4	241	3	1.0		
26 OCT	S7	EP	Z	2 8 47.5			.5		
		ES	X	53.3			.5		
26 OCT	S4	EP	Z	2 18 30.0			.5		
		ES	Y	36.5			.5		
26 OCT	S7	EP	Z	2 18 39.4			1.4		
		ES	X	56.6			1.4		
26 OCT	S7	EP	Z	2 25 48.9	322.6	.3	.4		
		ES	X	54.1			.4		
26 OCT	S7	EP	Z	2 33 42.8	403.2	.2	.8		
		ES	X	55.8			.8		
26 OCT	S4	EP	P	2 33 47.1			.8		
		ES	Y	57.7			.8		
26 OCT	S12	EP	Z	2 53 5.5	161.3	.3	3.5		
		ES	X	46.8			3.5		
26 OCT	S9	EP	Z	2 53 46.7	64.1	.2	R		
		ES	Y	54 9.0			R		
26 OCT	S11	EP	Z	3 32 26.0			.4		
		ES	Z	30.4			.4		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
26 OCT	S12	EP	Z	3 46 57.7	80.6	.2	.4		
		ES	X	47 1.8			.4		
26 OCT	S1	EP	Z	4 0 44.1			2.1		
		ES	Y	1 9.4			2.1		
26 OCT	S4	EP	Z	4 38 37.8	121.0	.2	.5		
		ES	Y	44.7			.5		
26 OCT	S7	EP	Z	4 38 53.0			1.9		
		ES	X	39 16.7			1.9		

26 OCT 5 22 57.0 42.1N 142.5E HOKKAIDO, JAPAN REGION  
H = 51 KM MAG = 4.4

26 OCT	S1	EP	Z	5 23 43.7	1.10	.4	3.0	251	
26 OCT	S4	EP	Z	5 24 9.1	645.2	.2	5.1	241	-3.3
		ES	Y	25 3.7			5.1	241	-5.8
26 OCT	S7	EP	Z	5 24 26.9	161.3	.2	6.6	245	-5.3
		ES	X	25 37.3			6.6	245	-10.4
26 OCT	S9	EP	Z	5 24 49.7	362.9	.3	8.2	253	-5.7
		E	Z	56.8			8.2	253	
		E	Y	26 12.0			8.2	253	
26 OCT	S11	EP	Z	5 24 57.5			8.7	243	-5.7
		E	Z	25 53.0			8.7	243	
26 OCT	S12	EP	Z	5 25 14.7	80.6	.2	10.1	249	-7.2
		S(PP)	Z	25.3			10.1	249	-8.9
		E	X	26 56.0			10.1	249	

26 OCT	S1	EP	Z	5 48 8.8	887.1	.2	1.0		
		ES	Y	21.7			1.0		
26 OCT	S4	EP	Z	5 48 19.9			1.7		
		ES	Y	40.7			1.7		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
26 OCT	6	3	10.0	46.7N 146.3E	OBS PRELIMINARY EPICENTER -- (4)				
					H = 0 KM				
26 OCT	S4	EP	Z	6 3 52.2			2.5	324	-0.8
		ES	Y	59.4			2.5	324	1.1
26 OCT	S7	EP	Z	6 4 2.9	121.0	.3	3.3	300	-1.5
		ES	X	19.8			3.3	300	-11.2
26 OCT	S1	EP	Z	6 4 6.1			3.5	360	-1.1
26 OCT	S9	EP	Z	6 4 25.6	201.6	.2	5.0	292	-2.1
		E	Y	56.4			5.0	292	
26 OCT	S11	EP	Z	6 13 11.3					
26 OCT	S11	EP	Z	6 41 54.9			.5		
		ES	Z	42 .2			.5		
26 OCT	S11	EP	Z	7 0 25.7			.4		
		ES	Z	30.5			.4		
26 OCT	S1	EP	Z	7 20 40.5			.8		
		ES	X	51.0			.8		
26 OCT	S7	EP	Z	7 41 5.7			.9		
		ES	X	18.1			.9		
26 OCT	S7	EP	Z	8 1 41.9			.8		
		ES	X	53.2			.8		
26 OCT	8	24	35.0	45.1N 148.8E	OBS PRELIMINARY EPICENTER -- (4)				
					H = 30 KM				
26 OCT	S4	-IP	Z	8 24 44.4	403.2	.2	.5	25	-0.9
		ES	Y	51.5			.5	28	1.4
26 OCT	S7	EP	Z	8 24 55.3	121.0	.2	1.2	269	-0.7
		E	Z	25 16.4			1.2	269	
26 OCT	S1	EP	Z	8 25 15.1			2.6	42	-1.1
		ES	X	39.4			2.6	42	-5.6
26 OCT	S9	EP	Z	8 25 19.8	121.0	.2	3.0	273	-1.5
		ES	Y	49.4			3.0	273	-5.2

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
26 OCT	8 29	16.0	48.1N	153.8E	OBS PRELIMINARY EPICENTER -- (5) H = 150 KM				
26 OCT	S11	EP	Z	8 29 49.1			1.7	18	1.1
		E	Z	30 14.8			1.7	18	
26 OCT	S12	EP	Z	8 29 50.2	483.9	.2	1.9	331	
		ES	X	30 16.9			1.9	331	.9
26 OCT	S9	EP	Z	8 30 5.4	725.8	.3	3.1	10	-.6
		ES	Y	42.5			3.1	10	-1.6
26 OCT	S7	EP	Z	8 30 10.9	80.6	.1	3.7	36	-2.7
		E	X	23.8			3.7	36	
		ES	X	31 3.1			3.7	36	5.3
26 OCT	S1	EP	Z	8 30 57.2	48.1	.2	7.2	44	-2.3
		E	Y	32 58.2			7.2	44	
26 OCT	S11	EP	Z	8 47 47.2					
26 OCT	S7	EP	Z	9 7 29.4	48.1	.1	.5		
		ES	X	35.7			.5		
26 OCT	S11	EP	Z	9 21 8.9					
26 OCT	S1	EP	Z	9 46 43.9	241.9	.3	3.2		*
		ES	Y	47 21.8			3.2		
26 OCT	S7	EP	Z	9 47 19.3	64.1	.2	R		*
		ES	X	48 26.1			R		
26 OCT	S9	EP	Z	9 47 43.2	80.6	.3	1.6		*
		E	Z	59.5			1.6		
		ES	Y	48 3.4			1.6		
26 OCT	S12	EP	Z	11 10 41.7	282.3	.2	.5		
		ES	X	48.7			.5		
26 OCT	S4	EP	Z	12 24 54.0			.5		
		ES	Y	25 .8			.5		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
26 OCT	S1	EP	Z	13 56 51.2			5.2		*
		ES	X	57 50.6			5.2		
26 OCT	S4	EP	Z	13 57 16.9			R		*
		ES	Y	58 38.0			R		
26 OCT	S7	EP	Z	13 57 36.0			R		*
		ES	X	59 11.0			R		
26 OCT	S4	EP	Z	14 7 32.6	32.1	.2	.5		
		ES	Y	39.7			.5		
26 OCT	S9	EP	Z	14 26 13.6	201.6	.2	.4		
		ES	Y	17.7			.4		
26 OCT	S11	EP	Z	15 25 52.6					
26 OCT	S7	EP	Z	15 27 46.3	161.3	.1	.5		
		ES	X	52.4			.5		
		E	X	29 33.9			.5		
26 OCT	S11	EP	Z	15 45 47.0			3.3		
		ES	Z	46 26.1			3.3		
26 OCT	S4	EP	Z	16 8 24.6			.8		
		ES	Y	35.3			.8		
26 OCT	S11	EP	Z	17 24 17.0			2.3		
		ES	Z	44.9			2.3		
26 OCT	S9	EP	Z	17 41 14.8	80.6	.3	4.8		
		ES	Y	42 9.6			4.8		
26 OCT	S12	EP	Z	17 41 2.6			5.4		
		ES	X	42 24.5			5.4		
26 OCT	S11	EP	Z	18 13 57.2			1.0		
		ES	Z	14 10.2			1.0		
26 OCT	S11	EP	Z	20 3 50.4			1.3		
		ES	Z	4 12.5			1.8		
26 OCT	S4	EP	Z	20 7 46.2	524.2	.2	.6		
		ES	Y	54.7			.6		
26 OCT	S7	E	Z	21 19 32.9					
26 OCT	S11	EP	Z	21 20 10.2			1.0		
		ES	Z	22.9			1.0		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
26 OCT	S7	E	Z	21 21 36.5					
26 OCT	S1	EP	Z	21 32 24.9			1.0		
		ES	X	37.8			1.0		
26 OCT	S1	EP	Z	21 41 53.7			.7		
		ES	Y	42 3.3			.7		
26 OCT	S7	EP	Z	21 50 3.1	80.6	.1	.5		
		ES	X	8.5			.5		
26 OCT	S11	EP	Z	23 27 21.8					
26 OCT	S11	EP	Z	23 30 20.5			5.7		
		ES	Z	31 26.2			5.7		
26 OCT	S7	EP	Z	23 36 48.8	887.1	.1	.5		
		ES	X	55.3			.5		
26 OCT	S9	EP	P	23 37 10.3			1.4		
		ES	Y	28.2			1.4		
26 OCT	S1	EP	Z	23 39 19.7	282.3	.1	1.6		*
		E	Y	29.3			1.6		
		ES	Y	39.3			1.6		
26 OCT	S4	EP	Z	23 39 34.3			2.5		*
		ES	Y	40 4.6			2.5		
26 OCT	S7	EP	X	23 39 51.5			4.2		*
		ES	X	40 40.3			4.2		
26 OCT	S9	EP	Z	23 40 15.0	241.9	.2	5.1		*
		E	Z	22.8			5.1		
		ES	Y	41 13.6			5.1		
26 OCT	S12	EP	Z	23 40 38.2	32.1	.2	R		*
		ES	X	41 55.6			R		
27 OCT	S11	EP	Z	0 30 7.2			R		
		ES	Z	31 42.1			R		
27 OCT	S7	E	X	1 1 44.3					
27 OCT	S7	E	X	1 4 2.2					

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
27OCT	2 27	49.7	14.1N	145.3E	MARIANA IS H = 125 KM		MAG = 5.2		
27OCT	S12	EP E	Z Z	2 34 16.0 23.4	121.0	.6	33.3 33.3	198 198	-1.5
27OCT	S1	E	X	2 39 10.3					
27OCT	S12	EP ES	Z X	3 6 32.7 49.8	32.1	.2	1.4 1.4		*
27OCT	S11	EP	Z	3 6 38.0					*
27OCT	S9	EP ES	Z Y	3 6 52.8 7 23.8	201.6	.2	2.6 2.6		*
27OCT	S1	EP ES	Z Y	3 26 36.8 48.5			.9 .9		
27OCT	S1	EP ES	Z X	4 26 25.8 40.0			1.1 1.1		
27OCT	S7	EP ES	X X	4 57 35.4 43.0			.3 .5		*
27OCT	S4	EP ES	Z Y	4 57 50.0 58 5.6			1.2 1.2		*
27OCT	S9	EP ES	P Y	4 57 59.8 58 21.8			1.8 1.8		*

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
27 OCT	5 57	58.0	73.4N	54.8E	NOVAYA ZEMLYA				
					H = 0 KM	MAG = 6.3			
27 OCT	S11	EP	Z	6 6 40.8	2.9U	.6	48.4	338	-2.7
27 OCT	S4	EP	Z	6 6 42.1	645.2	.6	48.9	338	-5.0
27 OCT	S12	EP	Z	6 6 45.8	999.9		49.0	338	-2.3
		E	Z	54.0			49.0	338	
		EPP	Z	8 43.3			49.0	338	1.2
27 OCT	S7	EP	Z	6 6 43.2			49.0	338	-5.0
27 OCT	S1	EP	Z	6 6 50.1	1.1U	.6	49.7	338	-3.3
27 OCT	S9	EP	Z	6 6 51.7	7.3U	.9	49.8	338	-2.5
		EPCP	Z	8 25.1			49.8	338	9.6
		E(PP)	Z	55.0			49.8	338	5.2
		E	Z	9 38.5			49.8	338	
27 OCT	S4	EP	Z	6 45 44.1			1.6		
		ES	Y	46 4.5			1.6		
27 OCT	6 54	41.7	19.1N	145.3E	MARIANA IS				
					H = 222 KM	MAG = 4.7			
27 OCT	S12	EP	Z	7 0 18.1	80.1	.7	28.5	200	-0.2
		E	Z	25.6			28.5	200	
27 OCT	S1	EP	Z	7 25 5.7	322.6	.2	.6		
		ES	Z	14.7			.6		
27 OCT	S4	EP	Z	8 30 26.9	443.5	.1	.7		
		ES	Y	36.3			.7		
27 OCT	S7	EP	Z	8 30 42.0			1.8		
		ES	Z	31 4.5			1.8		
27 OCT	S1	EP	Z	8 30 44.0			1.6		
		ES	Y	31 3.3			1.6		
27 OCT	S11	FP	Z	8 49 4.1					



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
27OCT	9 18	15.5	20.2N	145.6E	MARIANA IS H = 118 KM		MAG = 5.4		
27OCT	S12	EP E	Z Z	9 23 51.4 24 24.4	112.2	.8	27.4 27.4	200 200	
27OCT	9 20	53.0	44.7N	150.1E	OBS PRELIMINARY EPICENTER -- (6) H = 15 KM				
27OCT	S7	EP ES E E	Z X X X	9 21 4.3 13.6 24 29.2 27 18.1	403.2	.1	.5 .5 .5 .5	214 214 214 214	-1.4 2.8
27OCT	S4	+IP ES	Z Y	9 21 13.3 27.2	604.8	.2	2.2 1.2	89 89	-1.4 -2.0
27OCT	S9	EP ES	Z Y	9 21 27.8 50.1	604.8	.2	2.1 2.1	263 263	-.2 7.5
27OCT	S11	EP	Z	9 21 36.7			2.7	230	-.4
27OCT	S1	EP ES	Z Y	9 21 41.3 22 16.7			3.1 3.1	59 59	-1.6 6.2
27OCT	S12	EP ES	Z X	9 21 52.9 22 34.4			4.0 4.0	245 245	-2.2 -7.7
27OCT	S9	E	Z	9 23 12.2					
27OCT	S1	EP	Z	9 27 25.0	282.3	.5			
27OCT	S9	E	Y	9 28 28.0					
27OCT	S1	EP E E	Z X Z	9 39 9.4 41 56.8 42 19.0					
27OCT	S7	EP ES E E	Z X X P	9 41 42.3 43 21.6 44 56.2 48 49.1				R R R R	
27OCT	S7	E	X	10 9 46.8					
27OCT	S13	EP ES	Z Y	10 12 15.5 13 13.8			5.1 5.1		
27OCT	S1	EP ES	Z Y	10 15 31.3 16 10.4	121.0	.2	3.3 3.3		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
27 OCT	10 30	53.0	43.9N	148.3E	OBS PRELIMINARY EPICENTER -- (5)				
					H = 0 KM				
27 OCT	S4	-IP	Z	10 31 8.8	2.3U	.3	.8	190	-2.3
		ES	Y	13.7			.8	190	-7.6
27 OCT	S1	EP	Z	10 31 21.8	241.9	.2	1.6	62	-0.9
		ES	Y	44.6			1.6	62	11.2
27 OCT	S7	EP	Z	10 31 27.1	80.6	.1	2.0	233	-1.4
		ES	X	54.9			2.0	233	19.5
27 OCT	S9	EP	Z	10 31 50.5	645.2	.2	3.5	254	.2
		E	Z	58.5			3.5	254	
		ES	Y	32 28.5			3.5	254	4.9
27 OCT	S11	EP	Z	10 31 58.7			4.2	234	-1.2
		E	Z	32 45.1			4.2	234	
27 OCT	S1	EP	Z	11 7 53.0	241.9	.4		R	
		ES	X	9 19.2				R	
27 OCT	S7	EP	Z	11 47 3.3	32.1	.1	.9		
		ES	X	15.8			.9		
27 OCT	S7	EP	Z	11 55 46.1	64.1	.2	1.0		
		ES	X	58.9			1.0		
27 OCT	S11	EP	Z	11 56 6.2					
27 OCT	S1	EP	Z	12 49 13.8			.5		
		ES	X	20.3			.5		
27 OCT	S13	E	Y	13 35 10.3	483.9	.3			



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
27 OCT	14 21	4.8	22.2N	145.9E	N PACIFIC OCEAN H = 29 KM MAG = 6.0				
27 OCT	S4	EP	Z	14 26 5.4	524.2	.7	22.5	186	2.0
		E	Y	26.3			22.5	186	
		ES	Y	30 5.7			22.5	186	1.8
27 OCT	S7	E	Z	14 26 21.3	121.0	.3	23.2	191	
		ES	X	30 24.4			23.2	191	8.7
		E	P	45 .0			23.2	191	
27 OCT	S9	EPP	Z	14 26 32.7	483.9	.4	23.5	197	-11.8
		ES	Y	30 25.1			23.5	197	4.3
27 OCT	S12	EP	Z	14 26 30.6	144.2	.9	25.4	200	-.2
		E(PP)	Z	27 9.2			25.4	200	-.7
		ES	X	31 10.1			25.4	200	17.2
27 OCT	S1	EP	Z	14 21 49.5	1.6U	.8	T		
		ES	Y	29 29.5			T		
27 OCT	S13	FP	Z	14 26 16.7					
		E	Y	27 7.0					
		ES	Y	31 35.7					
27 OCT	S13	E	P	14 48 16.2					
		E	P	49 35.7					
27 OCT	S1	EP	Z	15 28 5.8	2.1U	.2	.5		*
		ES	Y	12.2			.5		
27 OCT	S9	EP	Z	15 29 30.0	161.3	.3	R		*
		ES	Y	31 3.0			R		
27 OCT	S7	EP	Z	15 29 47.7			3.2		*
		ES	X	30 25.5			3.2		
27 OCT	S9	EP	Z	15 52 47.4	121.0	.2	R		
		E	Z	53 3.7			R		
		ES	Y	54 27.1			R		
27 OCT	S12	EP	Z	15 52 52.0	64.1	.4			
27 OCT	S4	EP	Z	16 56 27.8	201.6	.1	.7		
		ES	Y	27.1			.7		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
27 OCT	S7	EP	Z	16 57 58.3	161.3	.2	.5		
		ES	X	58 5.7			.5		
27 OCT	S1	EP	Z	17 7 11.8	362.9	.2	2.1		
		ES	Y	37.7			2.1		
27 OCT	S7	EP	Z	17 8 56.1			5.4		
		ES	X	9 57.5			5.4		
27 OCT	S11	EP	Z	17 9 15.4					

27 OCT 17 49 34.0 29.5N 142.2E S OF HONSHU, JAPAN  
H = 20 KM MAG = 4.8

27 OCT	S1	EP	Z	17 52 48.4	201.6	.3	14.0	195	-5.5
		ES	X	55 17.5			14.0	195	-12.9
27 OCT	S9	ES	Y	17 56 36.1					
27 OCT	S11	EP	Z	18 4 28.9					
27 OCT	S1	EP	Z	18 19 22.7			.5		
		ES	X	29.3			.5		
27 OCT	S1	EP	Z	18 36 21.3			1.5		
		ES	X	39.9			1.5		
27 OCT	S7	EP	Z	20 22 21.7			.4		
		ES	X	26.6			.4		
27 OCT	S13	EP	Z	20 36 1.6			.9		
		ES	Y	14.1			.9		
27 OCT	S12	EP	Z	22 7 39.6			2.4		
		ES	X	8 8.2			2.4		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
27OCT	22 57	54.0	43.9N	147.7E	OBS PRELIMINARY EPICENTER -- (7)				
					H = 35 KM				
27OCT	S4	EP	Z	22 58 10.8	999.9		1.0	216	-0.4
		ES	Y	22.2			1.0	216	-1.4
27OCT	S1	EP	Z	22 58 15.0	766.1	.2	1.2	53	-0.1
		ES	Y	30.3			1.2	53	-0.3
27OCT	S7	EP	Z	22 58 29.7	241.9	.1	2.4	240	-1.5
		ES	X	59.4			2.4	240	.2
27OCT	S9	EP	Z	22 58 52.5	524.2	.3	4.0	256	-1.3
		ES	Y	59 34.3			4.0	256	-5.4
27OCT	S11	EP	Z	22 59 .8			4.6	237	-1.6
27OCT	S13	EP	Z	22 59 16.2			5.7	231	-2.3
		ES	Y	23 0 24.8			5.7	231	1.1
27OCT	S12	EP	Z	22 59 17.2	121.0	.2	5.9	247	-3.7
		ES	X	23 0 19.5			5.9	247	-8.5

27OCT	S7	EP	Z	23 13 2.0	806.5	.2	.4		
		ES	X	7.1			.4		
27OCT	S11	EP	Z	23 13 9.7					

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
27OCT	23 46	47.7	41.7N	141.9E	HOKKAIDO, JAPAN REG				
					H = 71 KM MAG = 5.3				

27OCT	S1	EP	Z	23 47 40.4	1.0U	.2	5.6	247	-2.1
		ES	X	48 20.4			3.6	247	-3.7
27OCT	S4	SP	Z	23 48 6.1	604.8	.5	5.7	241	-5.0
27OCT	S7	EP	Z	23 48 24.3	201.6	.1	7.2	244	-7.4
		ES	X	49 37.3			7.2	244	-15.0
27OCT	S9	EP	Z	23 48 46.1	1.3U	.3	8.7	252	-7.4
		E	Y	50 13.8			8.7	252	
27OCT	S11	EP	Z	23 48 53.8			9.3	243	-7.6
27OCT	S13	EP	Z	23 49 8.2			10.4	239	-7.7
		ES	Y	50 57.7			10.4	239	-13.7
27OCT	S12	EP	Z	23 49 11.0	282.3	.2	10.7	248	-8.9
		E(PP)	Z	18.7			10.7	248	-14.7
		E	X	50 58.3			10.7	248	

28OCT	S7	EP	Z	1 14 32.3			.8		
		ES	X	42.8			.8		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
28 OCT	S1	EP	Z	1 28 48.6			.6		
		ES	Y	57.4			.6		
28 OCT	S1	EP	Z	1 41 16.4	1.0U	.2	1.2		*
		ES	X	31.3			1.2		
28 OCT	S4	EP	Z	1 41 17.4	362.9	.1	1.2		*
		E	Z	17.9			1.2		
		ES	Y	32.8			1.2		
29 OCT	S7	EP	Z	1 41 34.7	32.1	.1	2.8		*
		ES	X	42 8.3			2.8		
28 OCT	S9	EP	Z	1 51 58.2	161.3	.2	3.8		
		ES	Y	42 42.4			3.8		
28 OCT	S11	EP	Z	2 11 12.2					*
28 OCT	S9	EP	Z	2 11 21.3	161.3	.2	2.4		*
		ES	Y	49.7			2.4		
28 OCT	S12	EP	Z	2 11 27.3			2.9		*
		ES	X	12 1.8			2.9		
28 OCT	S12	EP	Z	2 36 58.0			2.2		
		ES	X	37 24.7			2.2		
28 OCT	S1	EP	Z	2 46 40.3					
28 OCT	S7	EP	Z	2 53 2.7	806.5	.2	.6		
		ES	X	11.4			.6		
28 OCT	S9	EP	Z	2 53 21.9	121.0	.3	1.4		
		ES	Y	38.9			1.4		



DAY	STA	PHASE	C	TIME	AMP	PER	DIS	AZI	RES
28 OCT	3 13	43.0	44.7N	148.9E	OBS PRELIMINARY EPICENTER -- (5) H = 60 KM				
28 OCT	S4	EP	Z	3 13 53.5	999.9		.3	87	.2
		ES	Y	14 1.7			.3	87	1.6
28 OCT	S7	EP	Z	3 14 4.9	80.6	.1	1.2	250	.7
		ES	X	23.9			1.2	250	3.1
28 OCT	S1	EP	Z	3 14 19.6			2.4	50	-1.4
		ES	Y	49.3			2.4	50	-.4
28 OCT	S9	ES	Y	3 15 1.0			2.9	266	-1.7
28 OCT	S11	EP	Z	3 14 33.9			3.4	239	-1.0
28 OCT	S7	EP	Z	3 20 52.0	80.6	.1	1.3		
		ES	X	21 8.5			1.3		
28 OCT	S9	EP	Z	3 44 35.5	241.9	.3	5.0		
		ES	Y	45 33.4			5.0		
28 OCT	S12	EP	Z	3 44 37.2			5.9		
		ES	X	45 45.2			5.9		
28 OCT	S7	EP	Z	4 13 21.2			1.3		
		ES	X	37.4			1.3		
28 OCT	S9	EP	Z	4 13 29.4	362.9	.2	.8		
		ES	Y	40.2			.8		
		E	Y	14 38.3			.8		
28 OCT	S11	EP	Z	4 23 1.2					
28 OCT	S1	EP	Z	5 9 7.3			1.1		
		ES	Y	21.2			1.1		
28 OCT	S11	EP	Z	5 34 1.5					
28 OCT	S1	EP	Z	6 8 1.0			1.0		
		ES	X	14.5			1.0		
28 OCT	S11	EP	Z	7 17 24.4					
28 OCT	S7	EP	Z	7 17 24.5			.5		
		ES	X	31.9			.5		
28 OCT	S9	EP	Z	7 17 26.1	161.3	.2	2.5		
		ES	Y	56.1			2.5		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
28 OCT	S1	EP	Z	7 56 3.2			.6		
		ES	X	12.1			.6		
28 OCT	S4	EP	Z	8 51 53.9			.7		
		E	Z	56.9			.7		
		ES	Y	52 3.9			.7		
28 OCT	S1	EP	Z	9 56 47.1	201.6	.2	1.1		
		ES	X	57 1.7			1.1		
28 OCT	S13	EP	Z	12 21 24.4	121.0	.1	1.2		
		ES	Y	40.1			1.2		
28 OCT	S11	EP	Z	12 21 35.3			2.0		
		ES	Z	59.9			2.0		
28 OCT	S9	EP	Z	12 21 51.6	241.9	.2	3.0		
		ES	Y	22 26.8			3.0		
28 OCT	S1	EP	Z	13 4 14.2			.5		
		ES	X	21.6			.5		

29 OCT 13 20 30.6 35.8N 140.0E NR S. CST OF HONSHU, JAPAN  
H = 83 KM MAG = 4.8

28 OCT	S1	EP	Z	13 22 32.4	201.6	.4	8.8	216	-5.0
		ES	X	24 5.2			8.8	216	-10.7
29 OCT	S4	EP	Z	13 23 .2			11.0	219	-5.3
		E	Y	24 51.3			11.0	219	
28 OCT	S7	EP	Z	13 23 17.6			12.3	224	-6.1
		E	X	25 21.8			12.3	224	
28 OCT	S9	EP	Z	13 23 33.1	121.0	.3	13.5	232	-6.6
		E	Y	25 49.1			13.5	232	
28 OCT	S11	EP	Z	13 23 40.7					
		ES	Z	25 12.9					
28 OCT	S11	EP	Z	14 28 6.3					
28 OCT	S1	EP	Z	17 2 28.5	903.2	.2	.5		
		ES	Y	34.3			.5		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
28 OCT	17 35	7.4	51.1N	17 1E	OFF E CST OF KAMCHATKA H = 33 KM MAG = 4.4				
28 OCT	S13	EP	Z	17 36 16.3	282.3	.3	4.9	43	-3.7
		E	Z	31.1			4.9	43	
		ES	Y	37 8.8			4.9	43	-7.1
28 OCT	S12	EP	Z	17 36 21.3	121.0	.3	5.3	28	-5.0
		E	Z	23.9			5.3	28	
		ES	X	37 18.4			5.3	28	-8.8
		E	P	41 14.7			5.3	28	
		E	P	50.6			5.3	28	
28 OCT	S11	EP	Z	17 36 35.6			6.1	39	-2.1
28 OCT	S9	EP	Z	17 36 49.9	524.2	.2	7.3	32	-5.0
		ES	Y	38 5.0			7.3	32	-13.1
		E	Y	43 25.5			7.3	32	
28 OCT	S1	EP	Z	17 37 1.8			8.3	41	-6.2
		ES	X	38 32.6			8.3	41	-8.8
28 OCT	S11	EP	Z	17 56 52.0			1.3		
		ES	Z	57 8.9			1.3		
28 OCT	S7	EP	X	18 52.7			.5		
		ES	X	59.8			.5		
28 OCT	S13	EP	Z	18 44 45.5			2.6		
		ES	Y	45 16.6			2.6		
28 OCT	S7	EP	Z	18 45 20.1					*
		ES	X	48 13.9					
28 OCT	S9	E	Z	18 46 14.5					*
		E	Y	47 43.7					
		E	Y	48 50.4					
28 OCT	S13	EP	Z	18 47 8.4	161.3	.3	4.0		*
		ES	Y	54.7			4.0		
28 OCT	S12	EP	Z	18 47 18.8	80.6	.2	4.4		*
		ES	X	48 10.2			4.4		
29 OCT	S4	E	Z	19 28 .9					



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
28 OCT	S4	EP	Z	19 33 22.3	241.9	.1	.7		
		E	Z	22.8			.7		
		ES	Y	32.5			.7		
28 OCT	S1	EP	Z	21 5 46.3	282.3	.4	4.3		
		ES	Y	6 35.7			4.3		
28 OCT	S7	E	X	21 7 55.1					
28 OCT	S7	E	X	21 13 50.6					
28 OCT	S4	EP	Z	21 34 58.4	999.9		.3		*
		ES	Y	35 1.9			.3		
28 OCT	S7	EP	Z	21 35 .2			2.4		*
		ES	X	29.2			2.4		
28 OCT	S1	EP	Z	21 35 33.5			1.9		*
		ES	Y	57.0			1.9		
28 OCT	S9	EP	Z	21 35 35.0	241.9	.3	2.3		*
		ES	Y	36 2.7			2.3		
28 OCT	S12	EP	Z	21 39 11.0			1.2		
		ES	X	25.9			1.2		
29 OCT	S13	EP	Z	21 40 3.4	241.9	.2	1.0		
		ES	Y	16.7			1.0		
29 OCT	S13	EP	Z	22 1 30.3	241.9	.3	1.0		
		ES	Y	43.5			1.0		
28 OCT	S11	EP	Z	22 1 49.9			1.9		
		ES	Z	2 12.9			1.9		
28 OCT	S7	EP	Z	22 17 54.0	64.1	.1	.4		
		ES	X	59.2			.4		
28 OCT	S11	EP	Z	22 33 51.2			.5		
		ES	Z	56.6			.5		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
29 OCT	0 45	40.0	51.1N	159.1E	OFF E CST OF KAMCHATKA H = 33 KM MAG = 4.3				
29 OCT	S13	EP	Z	0 46 48.7	121.0	.3	4.9	43	-3.9
		E	Z	58.8			4.9	43	
		ES	Y	47 41.5			4.9	43	
29 OCT	S12	EP	Z	0 46 53.5	80.6	.3	5.3	28	-7.0
		E	Z	47 3.5			5.3	28	-5.4
		ES	X	48.2			5.3	28	
		E	P	51 58.1			5.3	28	-11.6
29 OCT	S11	EP	Z	0 47 6.2			6.1	39	-5.1
29 OCT	S9	EP	Z	0 47 21.6	322.6	.2	7.3	32	-5.9
		ES	Y	48 36.7			7.3	32	-14.0
		E	Y	54 27.1			7.3	32	
29 OCT	S7	EP	Z	0 47 33.1			7.3	41	-7.5
		ES	X	49 3.2			8.3	41	-10.8
29 OCT	S4	E	Z	0 48 58.7			9.6	44	
		ES	Y	49 37.0			9.6	44	-9.5
29 OCT	S1	EP	Z	0 48 35.5			11.0	43	-5.7
		ES	X	50 26.4			11.8	43	-13.0
29 OCT	S1	EP	Z	1 13 59.6			1.1		
		ES	Y	14 13.9			1.1		
29 OCT	S13	EP	P	1 44 3.6			4.9		*
		ES	Y	45 .3			4.9		
29 OCT	S12	EP	Z	1 44 10.5			4.8		*
		ES	X	45 5.3			4.8		
29 OCT	S9	EP	Z	1 44 36.4	201.6	.2	R		*
		ES	Y	45 52.1			R		
		E	Y	48 2.8			R		
29 OCT	S13	EP	Z	2 12 25.0	161.3	.3	.7		
		ES	Y	34.8			.7		
29 OCT	S12	EP	Z	2 12 29.8			1.3		
		ES	X	46.7			1.3		
		E	P	13 56.1			1.3		
29 OCT	S1	EP	Z	2 22 4.4			.7		
		ES	Y	13.6			.7		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
29 OCT	S1	EP	Z	2 36 28.9	483.9	.1	.5		
		ES	X	35.6			.5		
29 OCT	2 39	29.4	39.2N	21.2E	GREECE				
					H = 20 KM		MAG = 5.7		
29 OCT	S1	EP	Z	2 51 56.9	564.5	.7	84.2	320	-1.5
29 OCT	S11	EP	Z	2 51 59.6	927.4	.8	84.4	324	-2.2
		E	Z	52 5.7			84.4	324	
29 OCT	S13	EP	P	2 59 28.0			4.7		*
		ES	Y	3 0 22.1			4.7		
29 OCT	S12	EP	Z	2 59 35.4	80.6	.2	4.6		*
		E	Z	49.5			4.6		
		ES	X	3 0 29.1			4.6		
29 OCT	S11	EP	Z	2 59 48.3					*
29 OCT	S9	EP	Z	3 0 1.7	161.3	.2	R		*
		ES	Y	1 16.9			R		
		E	Y	7 40.7			R		
29 OCT	S4	EP	Z	3 42 25.1	80.6	.1	.7		
		ES	Y	34.7			.7		
29 OCT	S7	EP	P	3 42 29.3			1.2		
		ES	X	44.7			1.2		
29 OCT	S9	EP	Z	3 42 51.3	121.0	.2	2.4		
		ES	Y	43 19.7			2.4		
29 OCT	S11	EP	Z	3 43 .5			3.0		
		ES	Z	35.8			3.0		
29 OCT	S12	EP	Z	3 51 25.9	121.0	.2	4.8		
		ES	X	52 20.7			4.8		
29 OCT	S7	EP	P	4 2 47.4			.5		
		ES	X	53.9			.5		
29 OCT	S11	EP	Z	4 10 51.9			.4		
		ES	Z	56.6			.4		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
29 OCT	S11	EP	Z	4 58 20.0					
		ES	Z	32.0			.9		
							.9		
29 OCT	S1	EP	Z	5 48 28.6	443.5	.3	1.4		*
		ES	Y	45.9					
29 OCT	S4	EP	Z	5 48 35.7	564.5	.3	1.4		*
		ES	Y	49 41.9			4.0		
29 OCT	S7	EP	Z	5 49 13.3	322.6	.3	4.0		*
		ES	X	50 14.6			5.4		
29 OCT	S9	EP	Z	5 49 34.2	443.5	.3	5.4		*
		ES	Y	50 46.8					
		E	Y	56 50.5			R		*
29 OCT	S11	EP	Z	5 49 44.7			R		
		ES	Z	51 6.6			R		*
29 OCT	S13	EP	Z	5 49 59.6			R		
		ES	Y	51 33.4			R		*
29 OCT	S12	EP	Z	5 50 .4	282.3	.3	R		*
		ES	X	51 33.4			R		
		E	P	59 51.8			R		

29 OCT 6 30 22.0 41.8N 144.0E HOKKAIDO, JAPAN REG  
H " 32 KM MAG = 4.7

29 OCT	S1	EP	Z	6 30 57.5	685.5	.4	2.2	232	.6
		ES	Y	31 10.1					
29 OCT	S4	EP	Z	6 31 24.9	725.8	.6	2.2	232	-12.3
		ES	Y	32 9.5			4.4	230	-2.8
29 OCT	S7	EP	Z	6 31 42.6	282.3	.2	4.4	230	-8.8
		ES	X	32 43.6			5.8	237	-5.3
29 OCT	S9	EP	Z	6 32 3.0	524.2	.7	5.8	237	-10.7
		E	Y	33 14.9			7.3	247	-5.9
		E	Y	39 12.3			7.3	247	
29 OCT	S11	EP	Z	6 32 12.2			7.3	247	
		E	Z	33 35.1			8.0	237	-5.5
29 OCT	S13	EP	Z	6 32 28.3			8.0	237	
		ES	Y	34 3.5			9.1	234	-5.1
29 OCT	S12	EP	Z	6 32 28.4			9.1	234	-13.6
		E	Z	35.9			9.3	244	-2.3
		ES	X	34 11.0			9.3	244	
		E	P	41 54.6			9.3	244	-10.2
		E	P	42 40.5			9.3	244	

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
29 OCT	S1	EP	Z	8 9 .4					
		ES	Y	11 22.0			R		
							R		
29 OCT	S7	EP	Z	8 23 47.9					
		ES	X	54.2			.5		
							.5		
29 OCT	S1	EP	Z	9 49 15.4					
		ES	Y	50 6.6			4.4		
							4.4		
29 OCT	S9	EP	Z	9 49 40.0	80.6	.1			
		ES	Y	50 47.4			5.9		
							5.9		
29 OCT	S1	EP	Z	10 11 8.2	443.5	.3	3.1		*
		ES	Y	44.6			3.1		
29 OCT	S4	EP	Z	10 11 45.6	322.6	.2	3.9		*
		ES	Y	12 31.3			3.9		
29 OCT	S7	EP	Z	10 12 3.8	322.6	.3	.1		*
		ES	X	5.1			.1		
29 OCT	S9	EP	Z	10 12 23.6	121.0	.3	R		*
		ES	Y	13 36.7			R		
29 OCT	S11	EP	Z	10 12 34.2			R		*
		ES	Z	13 56.6			R		
29 OCT	S12	EP	Z	10 12 49.5	201.6	.3	R		*
		ES	X	14 23.5			R		
							R		
29 OCT	S11	EP	Z	12 2 14.8			.4		
		ES	Z	19.1			.4		
29 OCT	S12	EP	Z	14 8 20.9	161.3	.2	.3		
		ES	X	24.8			.3		
29 OCT	S11	EP	Z	14 16 9.7					
29 OCT	S13	EP	Z	14 17 26.1			1.3		
		E	Z	30.8			1.3		
		ES	Y	42.4			1.3		
29 OCT	S11	EP	Z	14 17 49.2			2.2		
		ES	Z	18 15.7			2.2		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
29OCT	S1	EP	Z	14 24 6.2	443.5	.2	1.2		*
		ES	X	21.2			1.2		
29OCT	S4	EP	Z	14 24 6.4	806.5	.2	1.2		*
		ES	Y	22.0			1.2		
29OCT	S7	EP	Z	14 24 24.4	282.3	.2	2.7		*
		ES	X	56.1			2.7		
29OCT	S9	EP	Z	14 24 46.7	241.9	.2	3.8		*
		ES	Y	25 31.3			3.8		
		E	Y	28 19.4			3.8		
29OCT	S11	EP	Z	14 25 44.8					

29OCT	S13	EP	Z	14 27 2.3	161.3	.3	1.6		
		ES	Y	22.7			1.6		
29OCT	S11	EP	Z	14 27 24.3			2.3		
		ES	Z	52.2			2.3		

29OCT 14 32 41.2 41.8N 144.1E HOKKAIDO, JAPAN REG  
H = 41 KM MAG = 5.0

29OCT	S1	EP	Z	14 33 15.2	483.9	.3	2.1	231	-0.1
29OCT	S4	EP	Z	14 33 42.7	999.9		4.3	230	-3.3
		ES	Y	34 30.2			4.3	230	-5.6
29OCT	S7	EP	Z	14 34 .0	766.1	.5	5.7	237	-6.0
		ES	X	35 3.7			5.7	237	-7.8
		E	P	40 44.6			5.7	237	
		E	X	47 54.6			5.7	237	
		E	X	49 4.2			5.7	237	
29OCT	S9	EP	Z	14 34 20.4	999.9		7.2	247	-6.5
		E	Y	35 32.1			7.2	247	
		E	Y	41 34.9			7.2	247	
29OCT	S11	EP	Z	14 34 30.4			7.9	237	-6.4
29OCT	S13	EP	Z	14 34 45.3	121.0	.5	9.1	233	-7.2
		ES	Y	36 21.8			9.1	233	-12.6
29OCT	S12	EP	Z	14 34 46.3	887.1	.5	9.2	244	-8.4
		E	X	36 20.6			9.2	244	
		E	P	42 17.1			9.2	244	
		E	P	44 51.4			9.2	244	

29OCT	S4	EP	Z	14 52 3.1	241.9	.1	.5		
		ES	Y	9.2			.5		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
29 OCT	S11	EP	Z	15 5 9.7					
29 OCT	S13	EP	Z	15 5 19.3					*
		ES	Y	33.9			1.1		*
29 OCT	S12	EP	Z	15 5 23.3	443.5	.2	1.1		
		ES	X	39.1			1.2		
29 OCT	S9	EP	Z	15 5 27.7	322.6	.2	1.2		
		ES	Y	45.4			1.4		*
		E	Y	7 4.6			1.4		
							1.4		
29 OCT	S4	EP	Z	17 29 29.2	80.6	.2	.2		
		ES	Y	31.5			.2		
29 OCT	S1	EP	Z	17 29 37.5					
		ES	X	56.6			1.5		
							1.5		
29 OCT	S7	E	Z	17 32 29.3					
29 OCT	S9	EP	Z	17 32 32.4	80.6	.2	1.0		
		ES	Y	45.3			1.0		
29 OCT	S11	EP	Z	17 39 42.4					
		ES	Z	47.7			.5		
							.5		
29 OCT	S7	EP	Z	17 51 15.3	121.0	.1	1.2		*
		ES	X	30.9					
29 OCT	S9	EP	Z	17 51 18.7	362.9	.2	1.2		*
		ES	Y	30.7			.9		*
		E	Y	52 34.6			.9		
29 OCT	S4	EP	Z	17 51 27.2			.9		
		ES	Y	52 6.1			3.3		*
							3.3		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
29 OCT	18	2	35.0	44.4N 150.1E	OBS PRELIMINARY EPICENTER -- (5)				
					H = 0 KM				
29 OCT	S7	EP	Z	18 2 50.0	806.5	.2	.8	202	-3.1
		E	Z	3 2.6			.8	202	
29 OCT	S4	EP	Z	18 2 56.8	999.9		1.2	103	-1.9
		ES	Y	3 13.0			1.2	103	.2
29 OCT	S9	EP	Z	18 3 11.2	241.9	.2	2.2	255	-1.4
		E	Z	13.9			2.2	255	
		ES	Y	35.2			2.2	255	16.8
		E	Y	5 24.6			2.2	255	
29 OCT	S11	EP	Z	18 3 21.7			2.9	225	-1.9
29 OCT	S1	EP	Z	18 3 23.6			3.0	64	-1.0
		ES	Y	57.9			3.0	64	16.9
29 OCT	S12	EP	Z	18 3 37.2			4.1	242	-3.5
		ES	X	4 20.0			4.1	242	-11.3
		E	P	7 47.3			4.1	242	
29 OCT	S13	EP	Z	18 3 38.5			4.2	220	-2.8
		ES	Y	4 24.6			4.2	220	-8.1

29 OCT	S1	EP	Z	18 33 51.4			4.5		
		ES	X	34 43.4			4.5		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
29 OCT	18	42	49.0	44.5N 150.0E	OBS PRELIMINARY EPICENTER -- (7)				
					H = 0 KM				

29 OCT	S7	EP	Z	18 43 .8	1.2U	.2	.7	210	-5.5
		E	Z	10.7			.7	210	
29 OCT	S4	EP	Z	18 43 8.4	403.2	.4	1.1	99	-3.1
		ES	Y	15.8			1.1	99	-10.3
29 OCT	S9	EP	Z	18 43 25.8	887.1	.2	2.2	258	-1.4
		ES	Y	49.0			2.2	258	16.2
		E	Y	45 22.6			2.2	258	
29 OCT	S11	EP	Z	18 43 34.0			2.9	228	-3.3
		E	Z	44 6.1			2.9	228	
29 OCT	S1	EP	Z	18 43 37.7	80.6	.3	3.0	62	-5.5
		E	Y	44 24.1			3.0	62	
29 OCT	S12	EP	Z	18 43 50.7	201.6	.2	4.1	244	-4.2
		ES	X	44 33.3			4.1	244	-12.4
29 OCT	S13	EP	Z	18 43 54.3	161.3	.3	4.1	222	-5.5
		ES	Y	44 37.8			4.1	222	-7.8

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
29 OCT	S11	EP	Z	20 58 47.4					
29 OCT 21 13 55.0 48.9N 155.9E OBS PRELIMINARY EPICENTER -- (7) H = 0 KM									
29 OCT	S13	EP	Z	21 14 26.4	564.5	.2	1.9	47	-1.8
		E	Z	30.7			.9	47	
		E	Z	51.0					
29 OCT	S12	EP	Z	21 14 36.2	403.2	.2	1.9	47	
		E	Z	44.1			2.5	11	-1.1
		E	X	15 7.3			2.5	11	
29 OCT	S11	EP	Z	21 14 45.6			2.5	11	
29 OCT	S9	EP	Z	21 15 2.0	645.2	.2	3.1	38	-5.5
		ES	Y	58.7			4.4	26	-2.2
		E	Y	17 10.3			4.4	26	
29 OCT	S7	EP	Z	21 15 13.5	80.6	.1	4.4	26	
		ES	X	16 15.7			5.3	42	-3.3
29 OCT	S4	EP	Z	21 15 33.5	161.3	.2	5.3	42	-5.8
		E	Y	16 2.7			6.6	48	-2.2
29 OCT	S1	EP	Z	21 16 2.5	161.3	.2	6.6	48	
		E	Y	52.4			8.8	46	-3.8
							8.8	46	
29 OCT	S11	EP	Z	23 21 1.2			5.5		*
		ES	Z	22 4.7					
29 OCT	S12	EP	Z	23 22 2.0			5.5		*
		ES	X	24.7			1.9		*
29 OCT	S9	EP	Z	23 22 4.8	161.3	.3	1.9		*
		ES	Y	28.3			1.9		*
							1.9		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
29 OCT	23 38	5.0	47.9N	154.7E	OBS PRELIMINARY EPICENTER -- (17) H = 15 KM				
29 OCT	S13	-IP	Z	23 38 16.1	282.3	.1	.6	68	-3.1
		E	Z	27.7			.6	68	
29 OCT	S12	EP	Z	23 38 29.7	201.6	.2	1.5	347	-1.5
		E	Z	37.1			1.5	347	
		ES	Z	50.4			1.5	347	4.5
29 OCT	S11	EP	Z	23 38 35.7			1.8	39	-0.5
29 OCT	S9	EP	Z	23 38 52.0	121.0	.2	3.1	21	-3.0
		ES	Y	39 27.8			3.1	21	5.0
29 OCT	S7	EP	Z	23 39 4.0	80.6	.1	4.0	45	-3.3
		ES	X	55.5			4.0	45	.7
29 OCT	S4	EP	Z	23 39 23.9			5.4	51	-2.9
		ES	Y	40 24.5			5.4	51	-6.1
29 OCT	S1	EP	Z	23 39 52.4			7.5	48	-4.8
		E	Y	40 18.4			7.5	48	
30 OCT	S11	EP	Z	2 3 23.0					
30 OCT	S13	E	Z	2 14 22.4	322.6	.4			
30 OCT	S11	-IP	Z	3 7 53.9					
30 OCT	S9	EP	Z	3 8 11.8	121.0	.2	1.5		
		ES	Y	30.0			1.5		
		E	Z	9 39.3			1.5		
30 OCT	S11	EP	Z	3 36 23.9			.4		
		ES	Z	28.7			.4		
30 OCT	S11	EP	Z	4 12 52.3			.5		
		ES	Z	59.9			.5		
30 OCT	S9	EP	Z	4 13 5.2	121.0	.2	2.1		
		ES	Y	31.1			2.1		
30 OCT	S1	EP	Z	4 54 46.9			1.5		
		ES	X	55 5.5			1.5		
30 OCT	S13	EP	Z	6 12 2.1			.9		
		ES	Y	13.6			.9		
30 OCT	S11	EP	Z	6 12 21.0			2.2		
		ES	Z	47.5			2.2		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
30 OCT	S7	EP	Z	6 45 25.4			2.5		
		ES	X	55.1			2.5		
30 OCT	S11	E	Z	7 8 12.1					
30 OCT	S13	EP	Z	7 19 32.0	161.3	.3	.7		
		ES	Y	41.6			.7		
30 OCT	S9	EP	Z	7 39 14.2	80.6	.2	.3		
		ES	Y	17.0			.3		
30 OCT	S11	E	Z	8 34 .8					
30 OCT	S11	EP	Z	9 21 27.1			2.0		
		ES	Z	51.0			2.0		
30 OCT	S11	EP	Z	9 33 17.2			1.4		
		ES	Z	35.2			1.4		
30 OCT	S11	+IP	Z	9 39 10.2			.4		
		ES	Z	15.3			.4		
30 OCT	S11	E	Z	10 22 52.7					
30 OCT	S1	EP	Z	10 49 7.4			.5		
		ES	X	14.3			.5		
30 OCT	S9	EP	Z	11 35 13.5	161.3	.2	.5		
		ES	Y	18.9			.5		
30 OCT	S4	EP	Z	12 6 39.9	725.8	.2	.5		*
		ES	Y	46.4			.5		
30 OCT	S7	EP	Z	12 6 48.6	32.1	.1	1.4		*
		ES	X	7 6.6			1.4		
30 OCT	S1	EP	Z	12 7 8.7			2.7		*
		ES	X	40.3			2.7		
30 OCT	S9	EP	Z	12 7 11.5	241.9	.2	2.5		*
		ES	Y	41.5			2.5		
30 OCT	S11	EP	Z	12 7 21.6	80.6	.2	3.2		*
		ES	Z	58.9			3.2		
30 OCT	S11	EP	Z	12 21 58.0					
30 OCT	S11	E	Z	12 37 32.0					

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
30 OCT	S7	EP	Z	13 5 45.3	80.6	.1	.6		
		ES	X	54.3			.6		
30 OCT 13 27 18.0 44.9N 150.1E OBS PRELIMINARY EPICENTER -- (4)									
H = 80 KM									
30 OCT	S7	EP	Z	13 27 32.1	322.6	.1	.4	232	1.0
		ES	X	49.6				232	9.4
30 OCT	S4	EP	Z	13 27 39.0	201.6	.1	1.2	79	-0.8
		ES	Y	58.7			1.2	79	2.9
30 OCT	S11	EP	Z	13 27 58.2			2.6	233	-0.5
		E	Z	28 19.7			2.6	233	
30 OCT	S1	EP	Z	13 28 5.5			3.2	56	-2.1
		ES	X	44.7			3.2	56	-0.3
30 OCT	S11	EP	Z	14 6 53.2			1.9		
		ES	Z	7 16.0			1.9		
30 OCT	S12	EP	Z	14 7 5.0	80.6	.3	2.7		
		ES	X	37.2			2.7		
30 OCT	S1	EP	Z	14 19 8.3	80.6	.1	1.8		
		ES	X	30.2			1.8		
30 OCT	S11	EP	Z	14 46 40.8					
30 OCT	S11	EP	Z	15 14 43.8					
30 OCT	S7	EP	Z	15 38 46.4			.5		
		ES	X	53.7			.5		
30 OCT	S11	EP	Z	15 45 12.2			1.3		
		ES	Z	28.8			1.3		
30 OCT	S11	EP	Z	16 10 2.9					
30 OCT	S11	EP	Z	16 46 5.9					*
30 OCT	S13	EP	Z	16 46 5.9	80.6	.2	.5		*
		ES	Y	47 4.6			.5		
30 OCT	S9	EP	Z	16 47 19.0	80.6	.2	1.9		*
		ES	Y	41.7			1.9		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
30 OCT	S11	EP	Z	17 9 57.1					
30 OCT	S11	E	Z	17 29 35.0					
30 OCT	S1	EP	Z	17 43 .1	322.6	.7			
30 OCT 17 45 54.0 45.3N 147.1E OBS PRELIMINARY EPICENTER -- (5) H = 0 KM									
30 OCT	S4	EP	Z	17 46 15.8	806.5	.4	1.2	303	-1.5
		ES	Y	24.6			1.2	303	-7.0
30 OCT	S1	EP	Z	17 46 31.4			2.2	14	-0.9
		ES	Y	53.5			2.2	14	15.7
30 OCT	S7	EP	Z	17 46 31.6	161.3	.2	2.4	275	-3.8
		ES	X	52.5			2.4	275	12.4
		E	X	49 24.4			2.4	275	
		E	X	52 27.2			2.4	275	
30 OCT	S11	EP	Z	17 47 1.9	64.1	.2	4.3	256	-0.1
		E	Z	45.2			4.3	256	
30 OCT	S9	EP	Z	17 46 48.7	32.1	.2	3.3		
		ES	Y	47 26.9			3.3		
30 OCT	S4	EP	Z	17 49 14.6	403.2	.2	1.2		
		ES	Y	29.7			1.2		
30 OCT	S9	EP	Z	17 49 38.2			2.2		
		ES	Y	50 4.7			2.2		
30 OCT	S9	EP	Z	17 51 44.1	201.6	.3	3.3		
		ES	Y	52 23.1			3.3		
30 OCT	S4	EP	Z	17 52 9.7	201.6	.2	.9		
		ES	Y	21.8			.9		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
30OCT 17 54 35.0 45.4N 150.3E OBS PRELIMINARY EPICENTER -- (4)									
H = 40 KM									
30OCT	S7	EP	Z	17 54 43.1	1.70	.3	.3	330	-.2
30OCT	S4	EP	Z	17 54 58.5	322.6	.4	1.5	60	-1.1
		ES	Y	55 14.8			1.5	60	-2.9
30OCT	S9	EP	Z	17 55 5.4	201.6	.1	2.0	283	-.9
		ES	Y	26.6			2.0	283	-2.9
		E	Y	56 40.7			2.0	283	
30OCT	S11	EP	Z	17 55 8.6			2.2	241	-1.0
		E	Z	33.4			2.2	241	
30OCT	S4	EP	Z	18 27 20.6	121.0	.3	1.2		*
		ES	Y	35.9			1.2		
30OCT	S1	EP	Z	18 27 20.6	241.9	.3	1.4		*
		ES	Y	37.9			1.4		
30OCT	S7	EP	Z	18 27 37.9	32.1	.1	1.5		*
		ES	X	56.6			1.5		
30OCT	S9	EP	Z	18 27 58.6	161.3	.2	3.5		*
		ES	Y	28 39.7			3.5		
30OCT	S11	EP	Z	18 28 8.8					*
30OCT	S7	EP	P	18 37 52.4			2.7		
		ES	X	38 24.0			2.7		
30OCT 19 4 18.0 35.7N 140.4E NR E CST OF HONSHU, JAPAN									
H = 76 KM MAG = 4.5									
30OCT	S1	EP	Z	19 6 18.6	80.6	.2	8.8	214	-5.3
		ES	Y	7 51.3			8.8	214	-10.5
30OCT	S4	EP	Z	19 6 47.2			10.9	217	-5.7
		E	Y	8 35.5			10.9	217	
30OCT	S7	EP	Z	19 7 10.6			12.2	223	.7
		E	X	8 6.5			12.2	223	
30OCT	S9	EP	Z	19 7 18.5	80.6	.2	13.4	230	-7.0
		E	Y	9 33.3			13.4	230	
30OCT	S12	EP	Z	19 7 53.8	80.6	.2	15.5	231	1.0
		E	X	10 20.9			15.5	231	

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
30OCT	S11	EP	Z	19 5 52.5	416.7	.4			
30OCT	S11	E	Z	19 9 58.5					
30OCT 19 14 23.0 45.3N 152.3E OBS PRELIMINARY EPICENTER -- (4)									
H = 40 KM									
30OCT	S9	EP	Z	19 14 34.8	604.8	.2	.6	301	-.2
		ES	Y	43.3			.6	301	1.7
		E	Y	15 20.6			.6	301	
30OCT	S11	EP	Z	19 14 43.9			1.3	202	-1.2
		E	Z	15 1.1			1.3	202	
30OCT	S7	EP	Z	19 14 44.2			1.3	82	-.5
		ES		55.7			1.3	82	-4.9
30OCT	S12	EP	L	19 14 58.2	121.0	.2	2.3	241	-1.5
		ES	K	15 24.4			2.3	241	-2.9
30OCT	S1	EP	Z	19 58 51.6				R	
		ES	Y	59 46.3				R	
30OCT	S7	EP	Z	19 59 44.3				R	
		ES	X	20 1 5.0				R	
30OCT	S11	EP	Z	20 1 54.6					
30OCT	S4	EP	Z	20 55 8.5	201.6	.1	1.9		*
		ES	Y	32.3			1.9		
30OCT	S7	EP	Z	20 55 21.5			3.1		*
		ES	X	58.0			3.1		
30OCT	S11	EP	Z	20 55 47.4					*
30OCT	S7	EP	Z	21 35 15.4			.5		
		ES	X	22.0			.5		
30OCT	S11	E	Z	21 54 58.9					
30OCT	S11	E	Z	22 9 33.2					



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
30 OCT	S1	EP	Z	22 14 16.9			4.1		*
		ES	Y	15 4.1			4.1		
30 OCT	S7	EP	Z	22 14 33.5			5.1		*
		ES	X	15 31.7			5.1		
30 OCT	S11	E	Z	22 14 54.1					*
30 OCT	S11	E	Z	22 16 8.0					
30 OCT	S7	EP	Z	23 2 11.8	64.1	.2	.5		
		ES	X	17.7			.5		
30 OCT	S4	E	Z	23 53 14.1					*
30 OCT	S7	EP	Z	23 53 18.0			1.7		*
		ES	X	38.6			1.7		
30 OCT	S13	EP	Z	23 53 44.7	16.0	.2	.6		*
		ES	Y	52.8			.6		
30 OCT	23 57 13.0	50.5N	178.7E	RAT IS, ALEUTIAN IS					
				H = 33 KM MAG = 4.5					
31 OCT	S11	EP	Z	0 1 18.0			17.5	67	2.6
31 OCT	S1	EP	Z	0 31 14.2			2.1		
		ES	Y	39.1			2.1		
31 OCT	S1	EP	Z	0 56 48.1			2.9		*
		ES	Y	57 21.9			2.9		
31 OCT	S11	EP	Z	0 57 45.2			R		*
		ES	Z	59 .8			R		
31 OCT	S12	EP	Z	0 58 2.9	80.6	.3	2.2		*
		ES	X	29.3			2.2		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
31OCT	S13	EP	Z	1 31 14.4			1.0		
		ES	Y	27.5			1.0		
31OCT	S11	EP	Z	1 31 43.5					
31OCT	S1	EP	Z	2 8 12.7			N		
		ES	Y	9 38.6			N		
31OCT	S11	EP	Z	2 11 43.1					
31OCT	S11	-IP	Z	2 14 47.7	1.9U	.2			*
31OCT	S12	EP	Z	2 14 57.3	121.0	.3	1.1		*
		E	Z	15 4.5			1.1		
		ES	X	11.4			1.1		
		E	X	16 4.9			1.1		
31OCT	S9	EP	Z	2 15 2.2	161.3	.2	1.1		*
		ES	Y	16.5			1.1		
		E	Y	16 26.0			1.1		
31OCT	S1	EP	Z	2 36 1.6	80.6	.2	.6		
		ES	Y	10.1			.6		
31OCT	S4	EP	Z	2 36 14.4			1.5		
		ES	Y	32.8			1.5		
31OCT	S7	EP	Z	2 53 7.7			.6		
		ES	X	16.6			.6		
31OCT	S1	EP	Z	3 18 14.7			.5		
		ES	Y	22.3			.5		
31OCT	S9	EP	Z	3 40 51.8	201.6	.5	T		
		E	Z	43 23.0			T		
31OCT	S11	EP	Z	3 43 .2					
31OCT	S7	EP	Z	3 49 17.1			.6		
		ES	X	26.1			.6		
31OCT	S7	EP	Z	4 28 .5			.6		
		ES	X	9.1			.6		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
31OCT	S12	EP	Z	5 13 11.8			2.5		*
		ES	X	41.8			2.5		
31OCT	S13	EP	Z	5 13 56.7	121.0	.1	1.6		*
		ES	Y	14 16.1			1.6		
31OCT	S11	EP	Z	5 14 22.1			1.6		*
		ES	Z	41.8			1.6		
31OCT	S4	EP	Z	5 24 3.1	201.6	.2	.7		*
		ES	Y	12.3			.7		
31OCT	S7	EP	Z	5 24 5.6	80.6	.1	1.0		*
		ES	X	18.5			1.0		
31OCT	S11	EP	Z	5 24 47.1			2.3		*
		ES	Z	25 14.3			2.3		
31OCT	S12	EP	Z	5 48 24.9	322.6	.3	4.8		
		ES	X	49 19.8			4.8		
31OCT	S11	EP	Z	5 52 18.0			1.0		*
		ES	Z	31.1			1.0		
31OCT	S12	EP	Z	5 52 28.7			1.8		*
		ES	X	51.2			1.8		
31OCT	S9	EP	Z	5 52 31.5			1.9		*
		ES	Y	54.8			1.9		
31OCT	S13	EP	Z	6 14 38.6	121.0	.2	1.1		*
		ES	Y	52.8			1.1		
31OCT	S11	EP	Z	6 14 46.0			1.5		*
		ES	Z	15 4.7			1.5		
31OCT	S12	EP	Z	6 14 51.2	80.6	.1	1.9		*
		ES	X	15 14.6			1.9		
31OCT	S9	EP	Z	6 15 1.8	80.6	.2	2.5		*
		ES	Y	31.9			2.5		
31OCT	S4	EP	Z	6 29 29.7	241.9	.4	1.4		
		ES	Y	46.9			1.4		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
31OCT	S7	EP	Z	6 29 46.0			2.8		
		ES	X	30 19.7			2.8		
31OCT	S7	EP	Z	6 39 59.6			.8		
		ES	X	40 10.5			.8		
31OCT	S4	EP	Z	6 40 37.3			3.4		
		ES	Y	41 17.3			3.4		
31OCT	S11	EP	Z	7 24 20.0			.5		
		ES	Z	25.8			.5		
31OCT	S7	EP	Z	7 52 25.7			.5		
		ES	X	32.8			.5		
31OCT	S11	EP	Z	7 57 10.4			1.1		
		ES	Z	24.8			1.1		
31OCT	S13	EP	Z	7 58 6.4			.5		
		ES	Y	12.5			.5		
31OCT	S11	EP	Z	9 38 22.0	121.0	.3			
31OCT	S11	E	Z	10 5 33.2					
31OCT	S7	EP	Z	10 23 33.5	32.1	.1	.5		
		ES	X	40.1			.5		
31OCT	S11	E	Z	10 36 29.3					
31OCT	S11	EP	Z	11 27 35.2					
31OCT	S11	EP	Z	12 24 52.8					
31OCT	S4	EP	Z	12 51 18.8	80.6	.1	.6		
		ES	Y	27.1			.6		
31OCT	S13	EP	Z	13 3 32.2			1.9		
		ES	Y	54.9			1.9		
31OCT	S11	EP	Z	13 3 48.4			3.1		
		ES	Z	4 24.8			3.1		
31OCT	S4	EP	Z	13 16 21.8			.9		
		ES	Y	33.4			.9		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
31OCT	S7	EP	Z	13 18 56.6	64.1	.2	1.8		*
		ES	X	19 19.1			1.8		
31OCT	S9	EP	Z	13 19 .2	443.5	.2	1.1		*
		ES	Y	14.4			1.1		
31OCT	S11	EP	Z	13 19 1.2			1.0		*
		ES	Z	14.6			1.0		

31OCT 13 36 59.0 29.8N 141.9E S OF HONSHU, JAPAN  
H = 33 KM MAG = 4.3

31OCT	S1	E	Z	13 50 10.1			13.8	196	
		ESCS	Y	52 34.8			13.8	196	-7.5

31OCT	S1	EP	Z	13 53 57.1					
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31OCT	S11	EP	Z	14 0 4.5					
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31OCT	S11	EP	Z	15 4 12.0			1.2		
		ES	Z	27.3			1.2		

31OCT	S11	EP	Z	15 38 29.7					
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31OCT	S1	EP	Z	15 38 50.4			2.5		
		ES	Y	39 20.6			2.5		

31OCT	S11	E	Z	16 0 33.8					
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31OCT	S1	EP	Z	16 12 9.4			1.9		
		ES	X	32.1			1.9		

31OCT	S11	EP	Z	16 16 45.1					
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31OCT	S9	EP	Z	16 25 48.7	121.0	.1	.4		
		ES	Y	53.3			.4		

31OCT	S7	EP	Z	16 35 50.4	999.9		.6		*
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		ES	X	59.5			.6		
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31OCT	S4	EP	Z	16 36 5.3	282.3	.2	1.3		*
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		ES	Y	22.1			1.3		
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31OCT	S11	EP	Z	16 36 17.2			2.4		*
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		ES	Z	45.7			2.4		
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DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
31OCT	S7	EP	Z	16 38 9.0	362.9	.4	.6		*
		ES	X	18.1			.6		
31OCT	S4	EP	Z	16 38 24.0	161.3	.2	1.4		*
		ES	Y	41.0			1.4		
31OCT	S11	EP	Z	16 39 38.3			.9		*
		ES	Z	50.0			.9		
31OCT	S13	EP	Z	16 39 50.7			1.5		*
		ES	Y	40 9.5			1.5		

31OCT	S1	EP	Z	17 34 5.9	121.0	.2	N		*
		ES	X	35 48.4			N		
31OCT	S7	EP	Z	17 34 29.9	48.1	.1	1.4		*
		ES	X	47.1			1.4		
31OCT	S4	EP	Z	17 34 38.5	241.9	.2	1.8		*
		ES	Y	35 .4			1.8		
31OCT	S11	EP	Z	17 34 46.0			2.3		*
		ES	Z	35 13.2			2.3		
31OCT	S12	EP	Z	17 35 2.9			3.4		*
		ES	X	42.6			3.4		

31OCT	S11	EP	Z	17 40 28.5			1.3		
		ES	Z	45.3			1.3		

31OCT 19 0 54.0 46.6N 152.9E OBS PRELIMINARY EPICENTER -- (7)  
H = 75 KM

31OCT	S11	EP	Z	19 1 3.8	999.9		.1	325	-1.1
31OCT	S13	EP	Z	19 1 15.9	887.1	.2	1.2	211	-.7
		E	Z	30.6			1.2	211	
		E	P	2 18.3			1.2	211	
31OCT	S12	-IP	Z	19 1 20.4	725.8	.3	1.6	276	-.7
		E	Z	39.8			1.6	276	
31OCT	S9	EP	Z	19 1 19.7	1.00	.2	1.6	358	-1.6
		ES	Y	36.6			1.6	358	-4.4
		E	Y	2 32.6			1.6	358	
31OCT	S7	EP	Z	19 1 27.1	80.6	.1	2.2	48	-2.4
		ES	X	51.8			2.2	48	-4.2
31OCT	S4	EP	Z	19 1 48.9	403.2	.3	3.6	57	-.5
		ES	Y	2 26.5			3.6	57	-5.0
31OCT	S1	EP	Z	19 2 17.2	161.3	.2	5.8	51	-1.9
		ES	Y	3 23.5			5.8	51	-1.5



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
31OCT	19 53	58.0	45.0N	151.7E	OBS PRELIMINARY EPICENTER -- (5) H = 0 KM				
31OCT	S7	EP	Z	19 54 14.7	604.8	.4	.8	99	-2.2
		ES	X	31.6					
31OCT	S9	EP	Z	19 54 14.9	121.0	.2	.8	99	3.3
		E	Z	16.7			.9	270	-3.0
		ES	Y	26.3			.9	270	
31OCT	S11	EP	Z	19 54 28.7	161.3	.2	.9	270	-4.8
		E	Z	49.8			1.8	212	-1.1
31OCT	S4	EP	Z	19 54 35.3	80.6	.2	1.8	212	
		ES	Y	55 .9			2.3	81	-2.5
31OCT	S12	EP	Z	19 54 42.0			2.3	81	18.1
		ES	X	55 13.8			2.8	240	-3.5
		E	X	57 57.2			2.8	240	15.8

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
31OCT	20 0	49.0	55.6N	164.2E	KOMANDORSKY IS REG H = 33 KM MAG = 4.6				
31OCT	S13	EP	Z	20 3 9.8	121.0	.3	10.2	35	-6.6
		ES	Y	4 58.4			10.2	35	-12.6
31OCT	S12	EP	Z	20 3 16.7	161.3	.4	10.8	28	-7.0
		E	X	5 6.5			10.8	28	
		E	P	14 40.2			10.8	28	
31OCT	S11	EP	Z	20 3 28.7			11.5	34	-5.2
31OCT	S1	EP	Z	20 4 39.9			17.0	37	-5.3

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
31OCT	S9	EP	Z	20 17 5.5	121.0	.2	2.0		
		E	Z	13.2			2.0		
		ES	Y	29.9			2.0		
31OCT	S9	EP	Z	20 43 7.8			.3		
		ES	Y	11.7			.3		
31OCT	S1	EP	Z	20 45 41.1			.6		
		ES	Y	49.4			.6		
31OCT	S13	EP	Z	20 46 27.5	80.6	.1	1.2		
		ES	Y	42.9			1.2		
31OCT	S11	EP	Z	20 46 30.4	201.6	.2	1.4		
		ES	Z	47.5			1.4		
31OCT	S7	EP	Z	21 12 16.8	64.1	.2	.6		
		ES	X	25.8			.6		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
31OCT	S4	EP	Z	21 18 17.1	161.3	.2	.5		
		ES	Y	24.7			.5		
31OCT	S7	EP	Z	21 18 25.6			1.9		
		ES	X	48.3			1.9		
31OCT	S1	EP	Z	21 33 3.7	161.3	.2	4.4		
		ES	X	54.8			4.4		
31OCT	S9	EP	P	22 48 12.2			.4		
		ES	Y	16.9			.4		
31OCT	S7	EP	Z	22 51 26.4	241.9	.1	.5		
		ES	X	33.0			.5		
31OCT	S4	EP	Z	23 12 8.1			4.0		
		E	Y	21.6			4.0		
		ES	Y	54.7			4.0		
31OCT	S11	EP	Z	23 13 12.5					
31OCT	S11	EP	Z	23 45 44.7	282.3	.3			

31OCT 23 50 17.0 45.1N 151.5E OBS PRELIMINARY EPICENTER -- (6)  
H = 30 KM

31OCT	S7	EP	Z	23 50 29.7	524.2	.3	.7	92	-.8
		ES	X	33.8			.7	92	-4.4
31OCT	S9	EP	Z	23 50 35.7	806.5	.2	1.1	276	-.2
		ES	Y	48.2			1.1	276	-1.5
		E	Z	51 53.1			1.1	276	
31OCT	S11	EP	Z	23 50 44.2			1.7	217	-1.4
31OCT	S4	EP	Z	23 50 51.7	161.3	.2	2.2	78	-.2
		ES	Y	51 18.2			2.2	78	2.3
31OCT	S12	EP	Z	23 50 59.4	80.6	.2	2.9	243	-3.0
		ES	X	51 31.6			2.9	243	-3.3
		E	X	53 37.3			2.9	243	
31OCT	S13	EP	Z	23 51 3.5	80.6	.4	3.0	213	-.5
		ES	Y	37.9			3.0	213	

1NOV	S11	EP	Z	0 26 37.9			1.6		
		ES	Z	57.9			1.6		

1NOV	S11	EP	Z	0 58 27.8					
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DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
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1 NOV	S11	EP	Z	1 22 31.0					
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1 NOV	S7	EP	Z	2 15 35.0	80.6	.1	1.1		*
		ES	X	49.0			1.1		
1 NOV	S11	EP	Z	2 15 37.0			1.3		*
		ES	Z	53.0			1.3		
1 NOV	S9	EP	Z	2 15 38.5	201.6	.2	1.1		*
		ES	Y	52.9			1.1		

1 NOV	2 22 45.9	40.4N	139.9E	NEAR W CST OF HONSHU, JAPAN					
				H = 170 KM			MAG = 4.3		

1 NOV	S1	EP	Z	2 24 6.6	403.2	.2	5.5	242	-1.0
		ES	X	25 7.6			5.5	242	-3.5
1 NOV	S4	EP	Z	2 24 31.2	241.9	.3	7.6	239	-4.2
		ES	Y	25 51.5			7.6	239	-9.3
1 NOV	S7	EP	Z	2 24 49.8	201.6	.2	9.1	243	-5.1
		E	Z	26 25.0			9.1	243	
1 NOV	S9	EP	Z	2 25 11.3	161.3	.3	10.7	249	-3.9
		ES	Y	27 .7			10.7	249	-11.7
1 NOV	S11	EP	Z	2 25 18.3			11.3	242	-5.0
		E	Z	27 15.9			11.3	242	
1 NOV	S13	EP	Y	2 25 35.0			12.4	239	-2.1
		ES	Y	27 41.6			12.4	239	-10.2
1 NOV	S12	EP	Z	2 25 35.1	201.6	.4	12.6	247	-5.5
		ES	X	27 43.5			12.6	247	-14.6

1 NOV	S4	EP	Z	2 30 18.1	80.6	.1	.5		
		ES	Y	25.0			.5		

1 NOV	S7	EP	Z	3 6 39.0	64.1	.2	.5		
		ES	X	45.5			.5		

1 NOV	S11	EP	Z	4 4 37.7	443.5	.4			
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DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
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1 NOV 5 4 57.0 45.4N 151.5E OBS PRELIMINARY EPICENTER -- (5)  
H = 0 KM

1 NOV	S7	EP	Z	5 5 14.1	282.3	.2	.7	69	-0.3
		ES	X	28.7			.7	69	5.2
1 NOV	S9	EP	Z	5 5 17.7	282.3	.2	1.1	291	-2.2
		E	Z	20.2			1.1	291	
		ES	Y	29.5			1.1	291	-4.8
1 NOV	S11	EP	Z	5 5 24.0			1.5	224	-1.4
		E	Z	42.4			1.5	224	
1 NOV	S4	EP	Z	5 5 31.2			2.3	70	-4.8
		ES	Y	49.1			2.3	70	7.9
		E	Y	6 4.9			2.3	70	
1 NOV	S13	EP	Z	5 5 41.7			2.8	216	-1.8
		E	Y	6 16.7			2.8	216	

1 NOV	S11	EP	Z	5 11 6.2			.3		
		ES	Z	9.9			.3		

1 NOV	S11	EP	Z	5 32 30.6	161.3	.1	.4		
		ES	Z	43.1			.4		

1 NOV 5 43 31.0 52.1N 173.1E NEAR IS, ALEUTIAN IS  
H = 33 KM MAG = 4.3

1 NOV	S13	EP	Z	5 46 40.9	16.0	.4	13.2	63	2.6
		ES	Y	49 .6			13.2	63	-4.2
1 NOV	S11	EP	Z	5 46 58.2			14.2	60	6.0

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
1 NOV	S7	EP	Z	6 4 21.2			2.3		*
		ES	X	49.3			2.3		
1 NOV	S9	EP	P	6 4 38.8			.9		*
		ES	Y	50.9			.9		
1 NOV	S11	EP	Z	6 4 44.9			1.6		*
		ES	Z	5 5.3			1.6		
1 NOV	S4	EP	Z	6 4 56.4			2.3		*
		ES	Y	5 24.3			2.3		
1 NOV	S12	EP	Z	6 5 .9			2.5		*
		ES	X	31.2			2.5		
1 NOV	S7	EP	Z	6 15 24.5			1.2		
		ES	X	39.9			1.2		
1 NOV	S12	EP	Z	6 16 43.8	48.1	.2	1.9		
		ES	X	17 6.6			1.9		
1 NOV	S11	EP	Z	6 25 40.4			.5		
		ES	Z	47.6			.5		
1 NOV	S11	EP	Z	6 35 12.2	121.0	.2	.5		
		ES	Z	19.4			.5		
1 NOV	6 56 56.0	45.3N	151.6E	OBS PRELIMINARY EPICENTER -- (4)					
				H = 40 KM					
1 NOV	S7	EP	Z	6 57 10.6	403.2	.3	.8	77	-.2
		ES	X	26.1			.8	77	5.8
1 NOV	S9	EP	Z	6 57 14.2	161.3	.2	1.0	287	-.2
		E	Z	16.6			1.0	287	
		ES	Y	26.9			1.0	287	-1.2
1 NOV	S11	EP	Z	6 57 20.7			1.5	220	-.9
		E	Z	30.7			1.5	220	
1 NOV	S13	EP	P	6 57 38.0			2.8	214	-1.8
		ES	Y	58 11.9			2.8	214	-1.1

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
1 NOV	7	1	.4	43.2N 143.4E	HOKKAIDO, JAPAN REG H = 127 KM MAG = 4.8				
1 NOV	S1	-IP	Z	7 1 37.6	1.1U	.3	2.1	272	1.1
1 NOV	S4	EP	Z	7 1 58.9	999.9		4.0	250	-1.7
		ES	Y	2 43.7			4.0	250	-3.0
1 NOV	S7	EP	Z	7 2 17.2	999.9		5.5	252	-3.7
		ES	X	3 13.9			5.5	252	-9.4
1 NOV	S9	EP	Z	7 2 39.5	1.5U	.2	7.1	259	-4.0
		E	Z	41.9			7.1	259	
1 NOV	S11	EP	Z	7 2 45.4			7.6	248	-4.0
1 NOV	S13	EP	Z	7 2 59.7	241.9	.4	8.6	242	-3.3
		ES	Y	4 25.7			8.6	242	-13.0
1 NOV	S12	EP	Z	7 3 2.7	564.5	.3	9.0	253	-5.6
		E	Z	4 33.2			9.0	253	
		E	P	9 46.9			9.0	253	
		E	Z	10 53.0			9.0	253	
1 NOV	S7	EP	Z	7 56 1.0	403.2	.3	.5		
		ES	X	7.0			.5		
1 NOV	S4	-IP	Z	8 13 45.1	241.9	.1	.5		
		ES	Y	53.0			.5		
1 NOV	S4	EP	Z	8 15 15.1	161.3	.2	1.2		
		ES	Y	31.0			1.2		
1 NOV	S9	EP	Z	8 38 47.3	999.9				*
		E	Z	41 36.5					
1 NOV	S11	EP	Z	8 39 7.5					*
1 NOV	S7	EP	Z	8 39 12.6	32.1	.1	1.9		*
		ES	X	36.0			1.9		
		E	P	41 1.8			1.9		
1 NOV	S1	EP	Z	8 39 24.0	241.9	.1	.5		*
		ES	X	29.5			.5		
1 NOV	S13	EP	Z	8 40 34.0	322.6	.1	1.2		
		ES	Y	49.7			1.2		
1 NOV	S12	EP	Z	8 40 48.0	161.3	.2	2.2		
		ES	X	41 14.3			2.2		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
1 NOV	S11	E	Z	9 25 45.4					
1 NOV	S11	EP	Z	9 47 38.3			.4		
		ES	Z	43.5			.4		
1 NOV	S4	EP	Z	9 55 35.7	161.3	.1	.5		
		ES	Y	42.7			.5		
1 NOV	S11	E	Z	11 2 18.4					
1 NOV	S7	EP	Z	11 5 25.1	80.6	.1	1.2		
		ES	X	40.7			1.2		
1 NOV	S11	EP	Z	11 5 38.5			1.4		
		ES	Z	55.5			1.4		
1 NOV	S12	EP	Z	11 31 42.9	121.0	.1	.5		
		ES	X	49.2			.5		
1 NOV	S13	EP	P	11 55 53.3			.9		
		ES	Y	56 5.5			.9		
1 NOV	S7	EP	P	13 13 48.6			.6		
		ES	X	57.2			.6		
1 NOV	S11	EP	Z	13 36 14.2			.5		
		ES	Z	19.8			.5		
1 NOV	S4	EP	Z	13 49 26.9	161.3	.1	1.3		
		ES	Y	43.0			1.3		
1 NOV	S11	EP	Z	13 54 6.9			1.0		
		ES	Z	19.9			1.0		
1 NOV	S7	EP	Z	15 46 33.4	282.3	.1	.6		
		ES	X	48.3			.6		
1 NOV	S4	EP	Z	15 46 42.9			.7		
		ES	Y	52.7			.7		
1 NOV	S11	EP	Z	15 54 24.9					

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
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1 NOV 16 1 24.0 45.3N 150.1E OBS PRELIMINARY EPICENTER -- (7)  
H = 50 KM

1 NOV	S7	EP	Z	16 1 34.5	999.9		.3	300	.8
1 NOV	S4	EP	Z	16 1 45.6	999.9		1.3	61	-.9
		ES	Y	2 .5			1.3	61	-2.4
1 NOV	S9	EP	Z	16 1 57.0	524.2	.1	2.1	279	-.2
		ES	Y	2 20.8			2.1	279	-1.1
1 NOV	S11	EP	Z	16 2 .4	403.2	.3	2.4	240	-.8
		E	Z	26.7			2.4	240	
1 NOV	S1	EP	Z	16 2 15.8	80.6	.2	3.4	50	-.8
		ES	Y	55.0			3.4	50	-1.7
1 NOV	S13	EP	Z	16 2 16.5			3.5	229	-.9
		ES	Y	55.1			3.5	229	-3.0
1 NOV	S12	EP	Z	16 2 18.3	80.6	.2	3.7	254	-2.4
		ES	X	58.5			3.7	254	-5.5

1 NOV	S7	EP	Z	16 14 52.0	161.3	.1	.5		
		ES	X	57.9			.5		
1 NOV	S7	EP	Z	16 31 50.7	32.1	.1	1.1		
		ES	X	32 4.5			1.1		
1 NOV	S11	EP	Z	16 47 2.7			.4		
		ES	Z	7.9			.4		
1 NOV	S9	E	Z	16 47 38.3					
		E	Z	49 28.2					

1 NOV	S11	+IP	Z	16 48 53.4	999.9		.4		*
		ES	Z	58.6			.4		
1 NOV	S13	EP	Z	16 49 4.2			.9		*
		ES	Y	16.0			.9		
1 NOV	S7	EP	Z	16 49 25.8			2.0		*
		ES	X	50.3			2.0		

1 NOV	S13	EP	Z	17 0 41.4	201.6	.1	.5		
		ES	Y	47.8			.5		
1 NOV	S11	EP	Z	17 0 53.9			1.4		
		ES	Z	1 11.8			1.4		

DAY	STA	PHASE	C	TIME		AMP	PER	DIST	AZI	RES
1 NOV	S13	EP	Z	17	18	29.4	161.3	.2	1.3	
		E	Z			32.6			1.3	
		ES	Y			46.0			1.3	
1 NOV	S11	EP	Z	17	18	48.9				
1 NOV	S13	EP	Z	17	44	51.6	80.6	.2	3.0	*
		ES	Y		45	27.5			3.0	
1 NOV	S12	EP	Z	17	45	.0				*
		E	Z			43.6				
1 NOV	S11	EP	Z	17	45	10.0				*
1 NOV	S9	EP	Z	17	45	25.9	524.2	.2	5.3	*
		ES	Y		46	26.7			5.3	
1 NOV	S13	EP	Z	17	54	27.3	282.3	.3	3.1	*
		E	Z			30.9			3.1	
		ES	Y		55	3.4			3.1	
1 NOV	S12	EP	Z	17	54	35.5	80.6	.2	3.8	*
		E	Z			37.8			3.8	
		ES	X		55	19.8			3.8	
1 NOV	S11	EP	Z	17	54	45.9				*
01		ES	Z		55	39.3				
1 NOV	S9	EP	Z	17	55	1.9	524.2	.2	5.4	*
		ES	Y		56	3.0			5.4	
1 NOV	S7	EP	Z	17	55	12.7	64.1	.1	R	*
		E	X			28.8			R	
		ES	X		56	28.9			R	
1 NOV	S4	EP	Z	17	55	28.5			R	*
		ES	Y		59	55.4			R	
1 NOV	S4	EP	Z	18	1	36.2	161.3	.1	.7	
		ES	Y			45.7			.7	
1 NOV	S7	EP	Z	18	1	38.7	32.1	.1	1.1	
		ES	X			53.1			1.1	



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
1 NOV	S13	EP	Z	18 26 50.9	80.6	.2	3.8		*
		ES	Y	27 35.4			3.8		
1 NOV	S11	EP	Z	18 27 .9	282.3	.2	4.4		*
		ES	Z	51.7			4.4		
1 NOV	S12	EP	Z	18 27 5.2	201.6	.2	4.7		*
		ES	X	59.8			4.7		
1 NOV	S7	EP	Z	18 27 14.9			.4		*
		ES	X	28 19.2			.4		
1 NOV	S9	E	Z	18 27 15.8					*
		E	Y	28 16.9					
1 NOV	S1	EP	Z	19 4 26.6			2.6		
		ES	Y	58.1			2.6		
1 NOV	S4	EP	Z	20 18 47.1	80.6	.2	.6		
		ES	Y	55.3			.6		
1 NOV	S11	EP	Z	20 48 27.1	161.3	.1	1.4		
		ES	Z	44.6			1.4		
1 NOV	S11	EP	Z	22 14 23.2	201.6	.2	2.6		
		ES	Z	54.2			2.6		
1 NOV	S1	EP	Z	22 31 21.5	241.9	.1	.8		
		ES	X	32.8			.8		
1 NOV	S11	EP	Z	22 38 17.6					
1 NOV	S1	EP	Z	22 47 41.0			1.1		
		ES	X	55.1			1.1		
1 NOV	S4	EP	Z	22 48 40.1	161.3	.1	1.1		
		ES	Y	54.4			1.1		
1 NOV	S4	EP	Z	22 51 9.9			.5		
		ES	Y	17.7			.5		
1 NOV	S11	EP	Z	22 51 46.7			3.9		
		ES	Z	52 32.1			3.9		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
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1 NOV 23 14 36.0 43.4N 148.6E OBS PRELIMINARY EPICENTER -- (6)  
H = 0 KM

1 NOV	S4	EP	Z	23 14 58.0	999.9		1.3	176	-3.1
		ES	Y	15 9.5			1.3	176	-5.0
1 NOV	S1	EP	Z	23 15 6.0			1.7	81	-0.5
		ES	X	24.4			1.7	81	7.8
1 NOV	S7	EP	Z	23 15 16.1	121.0	.1	2.2	219	1.7
		E	K	45.3			2.2	219	
1 NOV	S9	EP	P	23 15 27.4			3.5	245	-5.0
		ES	Y	16 16.0			3.5	245	9.1
1 NOV	S11	EP	Z	23 15 46.3			4.4	227	.8
		E	Z	16 33.8			4.4	227	
1 NOV	S12	EP	Z	23 16 2.3	80.6	.2	5.6	239	-0.1
		ES	X	17 1.6			5.6	239	-8.1

1 NOV 23 50 30.0 46.8N 152.8E OBS PRELIMINARY EPICENTER -- (5)  
H = 0 KM

1 NOV	S11	+IP	Z	23 50 41.2	999.9		.3	335	.8
1 NOV	S13	EP	Z	23 50 51.5	241.9	.2	1.1	219	-1.2
		E	Z	54.9			1.1	219	
		ES	Y	51 5.4			1.1	219	-1.8
1 NOV	S12	EP	Z	23 50 56.4	201.6	.3	1.7	282	-4.3
		ES	X	51 15.1			1.7	282	4.4
1 NOV	S9	EP	Z	23 50 58.5	241.9	.3	1.8	356	-4.0
		ES	Y	51 15.8			1.8	356	4.6
1 NOV	S4	EP	Z	23 51 27.1			3.7	53	-2.3
		ES	Y	52 5.2			3.7	53	-2.5

2 NOV	S1	-IP	Z	0 22 15.9	887.1	.2	.5		
		ES	X	22.5			.5		
2 NOV	S4	EP	Z	0 30 17.9	20.6	.2	1.1		
		ES	Y	31.9			1.1		
2 NOV	S11	EP	Z	1 2 51.3					

DAY	STA	PHASE	C	TIME	AMP	PER	P(1ST	AZI	RES
2 NOV	S11	EP	Z	1 36 46.0			2.3		*
		ES	Z	37 13.1			2.3		
2 NOV	S13	EP	Z	1 36 50.6	80.6	.1	.5		*
		ES	Y	57.4			.5		
2 NOV	S12	EP	Z	1 36 59.6	161.3	.2	.8		*
		ES	X	37 10.4			.8		
		E	X	38 23.4			.6		
2 NOV	S12	EP	Z	1 50 10.8	32.1	.2	2.6		*
		ES	X	41.4			2.6		
		E	X	54 26.5			2.6		
2 NOV	S11	EP	Z	1 50 25.3					*
2 NOV	S9	EP	Z	1 50 40.1	161.3	.2	4.3		*
		ES	Y	51 30.2			4.3		
2 NOV	S11	EP	Z	2 5 50.2	121.0	.3			
2 NOV	S11	EP	Z	2 16 46.4	121.0	.3			
2 NOV	S9	E	Z	2 48 40.4					
2 NOV	3 39	2.0	44.8N	150.6E	OBS PRELIMINARY EPICENTER -- (4)				
					H = 10 KM				
2 NOV	S7	EP	Z	3 39 9.9	999.9		.3	170	-1.9
		ES	X	16.0			.3	170	.2
2 NOV	S4	EP	Z	3 39 28.1	161.3	.2	1.5	85	-1.2
		ES	Y	48.2			1.5	85	5.3
2 NOV	S9	EP	Z	3 39 32.1	645.2	.2	1.7	264	-1.1
		ES	Y	52.1			1.7	264	7.0
		E	Y	41 17.7			1.7	264	
2 NOV	S11	EP	Z	3 39 41.7			2.4	226	-1.2
		E	Z	40 12.7			2.4	226	

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
2 NOV	S11	EP	Z	4 56 37.8			4.6		*
		ES	Z	57 31.6			4.6		
2 NOV	S9	EP	Z	4 56 44.0	161.3	.2	5.0		*
		ES	Y	57 41.4			5.0		
2 NOV	S12	EP	Z	4 56 51.2			5.6		*
		ES	X	57 56.0			5.6		
2 NOV	S7	EP	Z	5 1 5.0	32.1	.1	.5		
		ES	X	11.4			.5		
2 NOV	S13	EP	Z	5 29 47.8	524.2	.2	1.3		*
		E	Z	51.0			1.3		
		ES	Z	30 4.3			1.3		
2 NOV	S12	EP	Z	5 29 58.8	161.3	.3	2.1		*
		E	Z	30 7.5			2.1		
		ES	X	24.6			2.1		
		E	P	31 39.4			2.1		
2 NOV	S11	EP	Z	5 30 8.1	64.1	.2			*
2 NOV	S9	EP	Z	5 30 23.2	121.0	.2	3.6		*
		ES	Y	31 5.7			3.6		
2 NOV	S11	EP	Z	7 28 54.3					
2 NOV	S11	EP	Z	8 30 34.2					
2 NOV	S11	EP	Z	9 7 8.2			.4		
		ES	Z	12.4			.4		
2 NOV	9 14	5.0	37.7N	141.8E	NR E CST OF HONSHU, JAPAN				
					H = 45 KM MAG = 4.2				
2 NOV	S1	EP	Z	9 15 42.8			6.5	214	2.9
		ES	X	16 43.2			6.5	214	-10.1
2 NOV	S9	EP	Z	9 16 47.5	121.0	.3	11.1	233	3.2
		ES	Y	18 38.5			11.1	233	-9.9
2 NOV	S12	EP	Z	9 17 13.4			13.2	233	1.0
		ES	X	19 26.4			13.2	233	-12.6



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
2 NOV	S11	E	Z	9 19 1.7					
2 NOV	S11	E	Z	9 50 32.3					
2 NOV	S7	EP	Z	9 58 49.1	161.3	.1	1.0		*
		ES	X	59 2.7			1.0		
2 NOV	S9	EP	Z	9 58 53.0	282.3	.2			*
		E	Z	59 7.7					
		E	Y	10 0 10.3					
2 NOV	S11	EP	Z	9 59 1.1					*
2 NOV	S12	EP	Z	9 59 16.9			3.6		*
		ES	X	58.5			3.6		
2 NOV	S12	EP	Z	10 9 7.9	121.0	.3	R		
		ES	X	10 16.9			R		
2 NOV	S11	EP	Z	10 9 16.7	201.6	.2			
2 NOV	S1	EP	Z	10 35 44.3			N		
		ES	Y	37 15.0			N		
2 NOV	S13	EP	Z	10 37 9.1			1.5		
		ES	Y	27.6			1.5		
2 NOV	S11	EP	Z	10 37 12.3					
2 NOV	S7	EP	Z	10 59 7.8	362.9	.2	.7		*
		ES	X	17.8			.7		
2 NOV	S4	EP	Z	10 59 18.8	80.6	.2	1.2		*
		ES	Y	34.2			1.2		
2 NOV	S11	EP	Z	10 59 42.9	161.3	.2			*
2 NOV	S11	EP	Z	11 11 21.3	80.1	.2	1.1		
		ES	Z	35.9			1.1		
2 NOV	S11	EP	Z	11 26 34.2			1.4		
		ES	Z	51.6			1.4		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
2 NOV	S7	EP	Z	11 45 8.0	40.2	.4	1.2		*
		ES	X	22.9			1.2		
2 NOV	S9	EP	Z	11 45 20.3	121.0	.3	1.0		*
		ES	Y	33.8			1.0		
		E	Y	47 1.3			1.0		
2 NOV	S4	EP	Z	11 45 23.3	161.3	.2	1.8		*
		ES	Y	45.1			1.8		
2 NOV	S11	EP	Z	11 45 30.6	96.2	.2	2.2		*
		ES	Z	57.2			2.2		

2 NOV 11 50 57.0 28.8N 139.3E BONIN IS REGION  
H = 421 KM MAG = 4.3

2 NOV	S1	EP	Z	11 54 13.8	161.3	.2	15.4	204	-1.1
		E	Y	57 15.2			15.4	204	

2 NOV	S11	EP	Z	12 13 19.1					
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2 NOV	S11	EP	Z	12 24 27.0	208.3	.3			
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2 NOV	S11	EP	Z	13 24 22.9					
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2 NOV	S11	EP	Z	13 30 17.9	362.9	.2	.4		*
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		ES	Z	22.5			.4		
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2 NOV	S12	EP	Z	13 30 24.5	121.0	.2	1.0		*
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		ES	X	37.3			1.0		
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		E	P	31 25.1			1.0		
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2 NOV	S9	EP	Z	13 30 31.9	201.6	.2	1.2		*
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		ES	Y	47.6			1.2		
--	--	----	---	------	--	--	-----	--	--

		E	Y	31 56.3			1.2		
--	--	---	---	---------	--	--	-----	--	--

2 NOV	S11	EP	Z	14 28 37.8					
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2 NOV	S11	EP	Z	15 3 2.1			.5		
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		ES	Z	9.2			.5		
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2 NOV	S11	EP	Z	15 18 46.3			.5		
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		ES	Z	52.7			.5		
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DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
2 NOV	S11	EP	Z	15 44 38.9	564.5	.2	.5		*
		ES	Z	45.7			.5		
2 NOV	S9	EP	Z	15 44 47.0	80.6	.2	.8		*
		ES	Y	57.9			.8		
		E	Y	45 50.9			.8		
2 NOV	S12	EP	Z	15 44 48.8			1.4		*
		ES	X	45 6.7			1.4		
		E	X	46 19.9			1.4		

2 NOV	S1	EP	Z	16 43 34.4			3.6		
		ES	Y	44 16.6			3.6		

2 NOV 17 25 48.0 43.1N 145.5E HOKKAIDO, JAPAN REGION  
H = 63 KM MAG = 4.1

2 NOV	S1	-IP	Z	17 26 2.0	8.7U	.4	.6	264	-.1
2 NOV	S4	EP	Z	17 26 26.8	604.8	.3	2.7	235	-3.0
		E	Z	56.2			2.7	235	
2 NOV	S7	EP	Z	17 26 47.1	80.6	.1	4.1	242	-3.3
		ES	X	27 34.4			4.1	242	-3.8
2 NOV	S9	EP	Z	17 27 8.1	725.8	.2	5.7	253	-4.3
		ES	Y	28 5.2			5.7	253	-12.5
2 NOV	S11	EP	Z	17 27 16.4	201.6	.2	6.3	240	-4.3
2 NOV	S13	EP	Z	17 27 32.1	121.0	.3	7.4	235	-4.0
		ES	Y	28 54.8			7.4	235	-5.1
2 NOV	S12	EP	Z	17 27 33.0	80.6	.3	7.7	247	-6.3
		E	Z	39.7			7.7	247	
		E	X	28 48.1			7.7	247	
		E	P	34 43.2			7.7	247	

2 NOV	S11	-IP	Z	18 33 30.7	999.9		.4		
		ES	Z	35.4			.4		
2 NOV	S9	EP	Z	18 33 56.6	322.6	.2	R		
		ES	Y	35 5.4			R		
2 NOV	S11	EP	Z	18 52 34.9			.4		
		ES	Z	39.9			.4		



DAY	STA	PHASE	C	TIME			AMP	PER	DIST	AZI	RES
2 NOV	S12	EP	Z	19	33	24.1			R		*
		ES	X		35	35.1			R		
2 NOV	S11	EP	Z	19	35	21.0					*
2 NOV	S9	EP	Z	19	35	27.5	201.6	.2	1.1		*
		ES	Y			51.9			1.1		
2 NOV	S11	EP	Z	21	42	25.0					
2 NOV	S9	EP	Z	21	55	7.9	403.2	.2	.4		
		ES	Y			12.3			.4		
2 NOV	S11	EP	Z	22	3	13.0			.4		
		ES	Z			17.4			.4		
2 NOV	S7	EP	Z	22	10	16.4	64.1	.2	.6		
		ES	X			25.0			.6		
2 NOV	S13	EP	Z	23	13	32.2	201.6	.3	2.3		*
		ES	Y		14	.0			2.3		
2 NOV	S11	EP	Z	23	13	45.0	443.5	.2	2.2		*
		ES	Z		14	11.4			2.2		
2 NOV	S12	EP	Z	24	13	47.7	161.3	.3	2.4		*
		ES	X		14	16.3			2.4		
2 NOV	S9	EP	Z	23	14	1.0	241.9	.2	3.2		*
		ES	Y			38.9			3.2		
3 NOV	S7	EP	Z	0	17	23.4	64.1	.1	.5		
		ES	X			30.2			.5		
3 NOV	S4	EP	Z	1	19	44.0	241.9	.3	.5		
		ES	Y			50.5			.5		
3 NOV	S11	EP	Z	1	42	13.6			.4		
		ES	Z			17.8			.4		
3 NOV	S13	EP	P	1	45	19.1			1.5		
		ES	Y			37.2			1.5		
3 NOV	S7	EP	Z	2	8	10.5			.5		
		ES	X			17.0			.5		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
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3 NOV 2 24 43.0 40.6N 145.8E OBS PRELIMINARY EPICENTER -- (5)  
H = 0 KM

3 NOV	S1	EP	Z	2 25 25.6	241.9	.2	2.6	189	-1.3
		E	X	57.0			2.6	184	
3 NOV	S4	EP	Z	2 25 51.8	201.6	.3	4.5	207	-2.6
		ES	Y	26 41.2			4.5	207	-10.0
3 NOV	S7	EP	Z	2 26 7.4			5.7	219	-3.6
		ES	X	27 9.4			5.7	219	-9.8
3 NOV	S9	EP	Z	2 26 24.0	121.0	.4	6.9	233	-3.5
		ES	Y	27 36.3			6.9	233	-11.3
		E	Y	29 46.3			6.9	233	
3 NOV	S11	EP	Z	2 26 39.4	201.6	.2	7.9	224	-2.2
		E	Z	28 1.2			7.9	224	
3 NOV	S12	E	Z	2 28 24.1			9.0	233	
		ES	X	29 1.4			9.0	233	21.4

3 NOV	S1	EP	Z	2 31 32.0			.5		
		ES	X	39.0			.5		

3 NOV	S13	EP	P	2 55 52.4			1.5		*
		ES	Y	56 11.5			1.5		
3 NOV	S12	EP	Z	2 56 3.3			2.8		*
		ES	X	36.1			2.8		
3 NOV	S11	EP	Z	2 56 14.5			2.3		*
		ES	Z	42.4			2.3		

3 NOV	S9	E	Z	2 57 8.6					
		E	Y	58 53.3					

3 NOV	S13	EP	Z	2 57 42.8	80.6	.1	.7		
		ES	Y	52.0			.7		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
3 NOV	S7	EP	Z	3 23 31.5	201.6	.4	1.0		•
		ES	X	45.2			1.0		
3 NOV	S9	EP	Z	3 23 32.7			.8		•
		ES	Y	43.3			.8		
		E	Z	24 39.3			.8		
3 NOV	S11	EP	Z	3 23 45.5					•
		E	Z	24 5.9					
3 NOV	S1	E	Y	4 41 28.9					
3 NOV	S11	EP	Z	4 54 33.8			1.3		
		ES	Z	50.3			1.3		
3 NOV	S12	EP	Z	5 14 39.1			R		
		ES	X	16 32.5			R		
3 NOV	S7	EP	Z	5 29 25.8	161.3	.2	.5		
		ES	X	32.7			.5		
3 NOV	S4	EP	Z	5 49 11.1	80.6	.2	.7		
		ES	Y	21.0			.7		
3 NOV	S9	EP	Z	5 49 47.7	161.3	.1	3.1		
		E	Z	55.5			3.1		
		ES	Y	50 24.6			3.1		
3 NOV	S4	EP	Z	5 59 14.9	161.3	.3	.9		
		ES	Y	26.5			.9		
3 NOV	S7	EP	Z	5 59 49.5					
		ES	X	57.4					
3 NOV	S9	EP	Z	6 14 15.3	645.2	.2			•
		E	Z	23.9					
3 NOV	S11	EP	Z	6 14 31.3			1.2		•
		ES	Z	46.2			1.2		
3 NOV	S12	EP	Z	6 14 38.0	121.0	.2	1.5		•
		E	Z	46.0			1.5		
		ES	X	56.7			1.5		
		E	P	16 20.2			1.5		
		E	P	22.6			1.5		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
3 NOV	S13	EP	P	7 1 51.4			.6		
		ES	Z	59.7			.6		
3 NOV	S7	EP	Z	7 24 40.5	32.1	.1	1.6		
		ES	X	25 .7			1.6		
3 NOV	S11	-IP	Z	7 30 12.1	999.9		.4		•
		ES	Z	17.2			.4		
3 NOV	S9	EP	Z	7 30 24.2	80.6	.2	.9		•
		ES	Y	36.6			.9		
		E	Y	31 31.6			.9		
3 NOV	S12	EP	Z	7 30 26.4					•
		E	Z	42.0					
		E	X	31 41.3					
		E	X	32 42.1					
3 NOV	S13	EP	Z	7 32 .1	121.0	.2	1.3		
		ES	Y	16.4			1.3		
3 NOV	S11	EP	Z	8 15 39.6			2.6		
		ES	Z	16 11.0			2.6		
3 NOV	S9	EP	Z	8 15 51.0			2.9		
		ES	Y	16 25.1			2.9		
3 NOV	S7	EP	Z	9 31 30.7			.5		
		FS	X	37.0			.5		
3 NOV	S13	EP	Z	10 43 22.3	161.3	.1	1.2		•
		E	Z	25.6			1.2		
		ES	Y	37.4			1.2		
3 NOV	S11	-IP	Z	10 43 25.7	362.9	.1	1.3		•
		ES	Z	42.4			1.3		
3 NOV	S12	EP	Z	10 43 33.0			1.8		•
		ES	X	55.5			1.8		
3 NOV	S9	EP	Z	10 43 40.2			2.4		•
		ES	Y	44 8.7			2.4		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
3 NOV	S11	EP	Z	11 1 47.9	1.011	.1	.5		
		ES	Z	53.9			.5		
		ET	Z	48 43.9			.5		
3 NOV	S9	EP	Z	11 41 56.3			2.3		
		ES	Y	42 23.5			2.3		
3 NOV	S13	EP	Z	11 41 57.0			5.4		
		ES	Y	42 59.9			5.4		
3 NOV	S12	EP	Z	11 48 51.5	524.2	.3	.9		*
		E	Z	58.3			.9		
		ES	X	49 4.0			.9		
		E	P	49.5			.9		
3 NOV	S13	EP	Z	11 48 56.4			1.4		*
		ES	Y	49 13.8			1.4		
3 NOV	S9	EP	Z	11 48 58.0	322.6	.4	1.2		*
		ES	Y	49 13.1			1.2		
		E	P	50 21.6			1.2		
3 NOV	S11	EP	Z	11 59 6.1					
3 NOV	S9	EP	Z	12 4 12.2	121.0	.2	.2		
		ES	Y	14.6			.2		
3 NOV	S13	E	Y	13 30 33.6					
3 NOV	S11	EP	Z	13 30 37.5			2.4		
		ES	Z	31 6.3			2.4		
3 NOV	S13	EP	Z	17 16 1.9			1.4		
		ES	Y	18.9			1.4		
3 NOV	S13	EP	P	17 23 21.7			1.7		
		ES	Y	42.7			1.7		
3 NOV	S11	EP	Z	17 23 43.1			3.0		
		ES	Z	24 18.0			3.0		
3 NOV	S4	EP	Z	18 19 30.9			1.3		
		ES	Y	47.5			1.3		
3 NOV	S11	EP	Z	18 42 6.3			.3		
		ES	Z	10.1			.3		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
3 NOV	S13	EP	P	19 2 32.3			1.6		
		ES	Y	51.7			1.6		
3 NOV	S1	EP	Z	19 47 34.5	685.5	.4	.7		
		ES	X	44.2			.7		
3 NOV	S4	EP	Z	19 48 .8	362.9	.6	2.4		*
		ES	Y	29.6			2.4		
3 NOV	S7	EP	Z	19 48 20.3	80.6	.2	3.9		*
		ES	X	49 5.2			3.9		
3 NOV	S9	EP	Z	19 48 41.1	121.0	.2	4.8		*
		ES	Y	49 37.0			4.8		
3 NOV	S11	EP	Z	19 48 48.9					*
3 NOV	S12	EP	Z	19 49 6.6			R		*
		ES	X	50 22.5			R		

3 NOV	S7	EP	Z	19 56 47.2	64.1	.1	.5		
		ES	X	53.9			.5		

3 NOV 20 12 18.0 44.7N 149.1E OBS PRELIMINARY EPICENTER -- (7)  
H = 35 KM

3 NOV	S4	EP	Z	20 12 27.2	999.9		.4	88	.5
3 NOV	S7	EP	Z	20 12 36.3	322.6	.4	1.1	247	-.8
3 NOV	S1	EP	Z	20 12 55.9			2.5	52	-1.5
3 NOV	S9	EP	Z	20 12 59.6	3.3U	.2	2.8	265	-1.7
		E	Z	13 29.6			2.8	265	
3 NOV	S11	EP	Z	20 13 7.4	967.7	.2	3.3	238	-.8
		E	Z	46.4			3.3	238	
3 NOV	S13	EP	Z	20 13 21.9			4.4	230	-2.6
		FS	Y	14 11.4			4.4	230	-4.3
3 NOV	S12	EP	Z	20 13 23.7	161.3	.2	4.6	250	-3.5
		ES	X	14 13.1			4.6	250	-7.1

3 NOV	S7	EP	Z	20 21 .5	403.2	.1	.5		
		ES	X	5.9			.5		

DAY	STA	PHASE	C	TIME			AMP	PER	DIST	AZI	RES
3 NOV	S4	EP	Z	21	11	59.8	999.9		.9		*
		ES	Y		12	11.5			.9		
		E	P		16	49.9			.9		
3 NOV	S7	EP	Z	21	12	12.8	161.3	.2	1.9		*
		ES	X			36.2			1.9		
3 NOV	S11	EP	Z	21	12	39.5					*
3 NOV	S9	EP	Z	21	12	42.6	80.6	.2	2.4		*
		ES	Y		13	11.6			2.4		
3 NOV	S12	EP	Z	21	12	56.4			4.8		*
		ES	X		13	51.5			4.8		
3 NOV	S7	EP	Z	21	25	42.1	32.1	.1	1.2		
		ES	X			57.8			1.2		
3 NOV	S9	EP	Z	21	25	42.7	80.6	.2	1.0		
		ES	Y			56.0			1.0		
3 NOV	S1	EP	Z	22	14	13.7	201.0	.2	N		*
		ES	Y		15	25.3			N		
3 NOV	S7	EP	Z	22	14	49.4	32.1	.1	3.8		*
		ES	X		15	33.2			3.8		
3 NOV	S11	EP	Z	22	15	14.3					*
3 NOV	S12	EP	Z	22	15	30.6	121.0	.5			*
3 NOV	S4	EP	Y	22	15	32.0					*
3 NOV	S11	EP	Z	22	41	1.3					
3 NOV	S9	EP	Z	23	6	6.1	80.6	.2	L		
		ES	Y		7	15.8			L		
3 NOV	S7	EP	Z	23	30	35.6			.5		
		ES	X			42.6			.5		
3 NOV	S7	EP	Z	23	57	2.9			.8		
		ES	X			13.4			.8		
4 NOV	S7	EP	Z	0	38	12.0			2.2		
		ES	X			38.7			2.2		
4 NOV	S'3	EP	P	0	41	32.9			4.4		
		ES	Y		42	23.4			4.4		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
4 NOV	S9	EP	Z	0 42 3.5	48.1	.2	L		
		ES	Y	43 19.4			L		
4 NOV	S11	EP	Z	0 45 59.1			.5		
		ES	Z	46 5.6			.5		
4 NOV	S4	-IP	Z	1 37 51.4	483.9	.2	.6		*
		ES	Y	59.9			.6		
4 NOV	S9	EP	Z	1 38 36.0	80.6	.2	3.0		*
		ES	Y	59 11.0			3.0		
4 NOV	S11	EP	Z	1 38 43.5					*
4 NOV	S13	EP	Z	1 57 47.2			.5		
		ES	Y	54.8			.5		
4 NOV	S11	EP	Z	1 58 6.3			1.7		
		ES	Z	27.7			1.7		
4 NOV	S9	EP	Z	1 58 25.1	80.6	.2	2.3		
		ES	Y	52.4			2.3		
4 NOV	S9	EP	Z	2 50 38.6	48.1	.2			
		E	Y	52 13.5					
4 NOV	S13	EP	Z	2 51 41.9			.9		
		E	Z	45.2			.9		
		ES	Y	54.2			.9		
4 NOV	S12	EP	Z	2 51 49.1	80.6	.2	1.5		
		ES	X	52 8.3			1.5		
4 NOV				0 42.0	36.3N	140.8E	NR E CST OF HONSHU, JAPAN		
							H = .73 KM MAG = 3.8		
4 NOV	S9	EP	Z	3 3 41.1	80.6	.3	12.7	231	.1
		E	Y	5 37.2			12.7	231	



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
4 NOV	S1	EP	Z	3 1 28.8					
		ES	Y	3 52.6			R		
4 NOV	S4	EP	Z	3 2 56.0					
		ES	Y	4 38.9			R		
4 NOV	S11	EP	Z	3 51 36.3	545.2	.1	.5		
		ES	Z	44.1			.5		
4 NOV	S11	EP	Z	4 49 40.1					
4 NOV	S11	EP	Z	5 46 59.6					
4 NOV	S13	EP	Z	6 31 42.9					
		E	Y	50.7					
		E	Y	33 18.7					
4 NOV	S12	EP	Z	6 31 48.8	80.6	.3			
		E	X	33 31.3					
4 NOV	S11	EP	Z	7 31 46.9					
4 NOV	S9	E	Z	7 32 7.7					
		E	Y	26.1					
4 NOV	S13	EP	Z	8 28 25.3	80.6	.3	1.1		
		ES	Y	40.0			1.1		
4 NOV	S4	EP	Z	8 38 51.9	322.6	.3	.5		*
		ES	Y	59.8			.5		
		E	Y	39 2.9			.5		
4 NOV	S11	EP	Z	8 39 26.5					*
4 NOV	S9	EP	Z	8 39 31.9	80.6	.2	3.2		*
		ES	Y	40 9.1			3.2		
4 NOV	S9	EP	Z	9 16 56.9	80.6	.2	.2		
		ES	Y	59.6			.2		
4 NOV	S9	EP	Z	9 55 23.3	241.9	.2	.2		
		ES	Y	25.0			.2		
4 NOV	S11	EP	Z	9 55 56.8					



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
4 NOV	S4	EP	Z	10 48 57.8	201.6	.4	2.1		*
		ES	Y	49 22.8			2.1		
4 NOV	S9	EP	Z	10 49 37.2	121.0	.3	4.5		*
		ES	Y	50 30.0			4.5		
4 NOV	S11	EP	Z	10 49 41.7			5.0		*
		ES	Z	50 39.1			5.0		

4 NOV	S11	EP	Z	10 54 7.6			1.2		
		ES	Z	22.5			1.2		

4 NOV 11 1 32.0 45.1N 151.6E OBS PRELIMINARY EPICENTER -- (6)  
H = 40 KM

4 NOV	S7	EP	Z	11 1 46.9	999.9		.8	92	.3
4 NOV	S9	-IP	Z	11 1 49.6	999.9		1.0	276	-.3
4 NOV	S11	EP	Z	11 1 59.3	322.6	.2	1.7	215	-.5
4 NOV	S4	EP	Z	11 2 7.7	806.5	.3	2.3	78	
		E	Y	14.2			2.3	78	
		ES	Y	28.0			2.3	78	
4 NOV	S12	+IP	Z	11 2 14.3	443.5	.2	2.9	243	-6.5
		E	Z	20.8			2.9	243	-1.9
		ES	X	44.3			2.9	243	
		E	P	4 56.6			2.9	243	-5.5
		E	P	5 7.3			2.9	243	
4 NOV	S13	EP	Z	11 2 16.3	80.6	.3	3.0	212	-1.9
		ES	Y	49.9			3.0	212	-3.4

4 NOV	S7	E	Z	11 7 12.7					
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4 NOV	S9	EP	Z	11 7 15.1	564.5	.2	.9		
		ES	Y	27.0			.9		
		E	Y	8 21.6			.9		

4 NOV	S12	EP	Z	11 27 42.0	161.3	.2	.5		
		E	Z	44.1			.5		
		ES	X	47.9			.5		

4 NOV	S9	EP	Z	11 28 16.2			1.6		
		FS	Y	36.0			1.6		

4 NOV	S11	EP	Z	11 57 18.1	64.1	.2			
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DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
4 NOV	S4	EP	Z	12 28 21.0	201.6	-2	.5		
		ES	Y	27.8			.5		
4 NOV	S4	EP	Z	12 33 32.7			1.1		
		ES	Y	47.0			1.1		
4 NOV	S11	EP	Z	13 37 20.2			.5		
		ES	Z	25.7			.5		
4 NOV	S11	EP	Z	13 41 13.6	604.8	.3			

4 NOV 14 34 19.0 46.0N 151.2E OBS PRELIMINARY EPICENTER -- (5)  
H = 0 KM

4 NOV	S7	EP	Z	14 34 39.6			1.0	29	-0.3
		ES	X	55.1			1.0	29	.4
4 NOV	S11	EP	Z	14 34 46.0	64.1	.2	1.3	249	1.1
		E	Z	35 4.7			1.3	249	
4 NOV	S9	+IP	Z	14 34 47.0	1.0U	.3	1.6	309	-1.8
		ES	Y	35 5.6			1.6	309	6.2
		E	Y	59.2			1.6	309	
4 NOV	S4	EP	Z	14 34 55.5			2.3	55	-3.5
		ES	Y	35 20.9			2.3	55	17.0
4 NOV	S12	EP	Z	14 35 2.5	32.1	.2	2.8	262	-3.4
		ES	X	34.2			2.8	262	16.9

4 NOV	S7	EP	Z	14 58 48.2			.7		
		ES	X	57.3			.7		

DAY	STA	PHASE	C	TIME			AMP	PER	DIST	AZI	RES
4 NOV	S4	EP	Z	16	10	45.4	645.2	.2	.6		*
		ES	Y			54.1			.6		
4 NOV	S7	EP	Z	16	10	56.5	483.9	.2	1.5		*
		ES	X		11	15.5			1.5		
4 NOV	S9	EP	Z	16	11	18.1	645.2	.2	2.8		*
		E	Z			25.9			2.8		
		ES	Y			51.2			2.8		
4 NOV	S11	EP	Z	16	11	24.3	201.6	.2	3.4		*
		ES	Z		12	3.6			3.4		
4 NOV	S13	EP	Z	16	11	39.7			4.2		*
		E	Z			43.0			4.2		
		ES	Y		12	28.8			4.2		
4 NOV	S12	EP	Z	16	11	41.0	201.6	.2	4.5		*
		E	Z			48.3			4.5		
		ES	X		12	32.8			4.5		
4 NOV	S11	EP	Z	17	38	2.7					
4 NOV	S11	EP	Z	17	41	40.8			.5		
		ES	Z			46.8			.5		
4 NOV	S13	EP	Z	17	48	52.6			1.9		
		ES	Y		49	16.2			1.9		
4 NOV	S7	EP	Z	18	7	58.8	32.1	.1	1.9		
		ES	Z		8	22.1			1.9		
4 NOV	S11	EP	Z	18	9	1.1					
4 NOV	S4	EP	Z	18	47	56.1	121.0	.1	.5		
		ES	Y		48	3.6			.5		
4 NOV	S4	EP	Z	20	0	5.7	161.3	.1	.4		
		E	Z			6.1			.4		
		ES	Y			10.5			.4		
4 NOV	S11	EP	Z	20	46	37.4					*
4 NOV	S4	EP	Z	20	47	1.1	685.5	.3	.7		*
		ES	Y			10.4			.7		
4 NOV	S7	EP	Z	20	47	5.2			1.0		*
		FS	X			18.9			1.0		
4 NOV	S9	EP	Z	20	47	28.7	121.0	.2	2.4		*
		ES	Y			57.2			2.4		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
4 NOV	S11	EP	P	21 8 51.0					
		ES	Z	55.3			.4		
							.4		
4 NOV	S13	EP	Z	21 32 33.2			1.8		
		ES	Y	55.8			1.8		
4 NOV	S11	EP	Z	21 33 1.6			2.1		
		ES	Z	27.4			2.1		
4 NOV	S13	EP	Z	22 23 43.4	685.5	.2	1.2		*
		ES	Y	59.0			1.2		
4 NOV	S11	EP	Z	22 23 44.1	1.3U	.2	1.3		*
		ES	Z	24 .3			1.3		
4 NOV	S12	-IP	Z	22 23 53.2	524.2	.2	1.9		*
		ES	X	24 17.0			1.9		
4 NOV	S9	-IP	Z	22 23 58.7	483.9	.2	2.2		*
		ES	Y	24 24.7			2.2		
		E	Y	25 34.4			2.2		
4 NOV	S11	EP	Z	23 14 28.3					
4 NOV	S12	EP	Z	23 15 35.2	80.6	.2	1.0		*
		ES	X	48.2			1.0		*
		E	Z	16 36.8			1.0		
4 NOV	S9	EP	Z	23 15 42.8	161.3	.2	1.2		*
		FS	Y	58.4			1.2		
		E	Y	17 8.1			1.2		
4 NOV 23 33 21.0 46.3N 153.8E OBS PRELIMINARY EPICENTER -- (4)									
H = 0 KM									
4 NOV	S11	EP	Z	23 33 31.6	524.2	.2	.6	110	-4.6
4 NOV	S12	EP	Z	23 33 38.8	80.6	.2	1.0	261	-2.9
		ES	X	51.4			1.0	261	-4.6
		E	P	34 36.3			1.0	261	-4.6
4 NOV	S9	EP	Z	23 33 46.0	201.6	.2	1.4	23	-2.0
		ES	Y	34 1.9			1.4	23	1.5
		E	Z	35 14.3			1.4	23	
4 NOV	S13	EP	P	23 33 46.8			1.4	181	-0.5
		ES	Y	34 1.8			1.4	181	1.7



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
4 NOV	S11	EP	Z	23 37 42.8	80.1	.2			*
		ES	Z	39 32.7					
4 NOV	S9	E	Z	23 37 57.4					*
4 NOV	S12	EP	Z	23 38 15.8	282.3	.2			*
		ES	X	40 1.6					
4 NOV	S9	E	Z	23 39 4.7					
		E	Y	26.9					
5 NOV	S13	EP	Z	1 15 22.6			4.0		
		ES	Y	16 9.7			4.0		
5 NOV	S11	EP	Z	1 16 28.9					
5 NOV	S11	EP	Z	2 0 34.8	362.9	.3			
5 NOV	S9	E	Z	2 50 6.1					
5 NOV	S11	EP	Z	2 59 54.1			.5		
		ES	Z	59.7			.5		
5 NOV	S4	EP	Z	3 34 50.7	201.6	.1	.5		
		ES	Y	57.9			.5		
5 NOV	S7	EP	Z	3 35 59.6			1.3		
		ES	X	36 15.9			1.3		
5 NOV	S13	EP	Z	4 20 18.8			.6		*
		ES	Y	27.1			.6		
5 NOV	S12	EP	Z	4 20 24.8			1.0		*
		ES	X	38.2			1.0		
5 NOV	S11	EP	Z	4 20 25.6			.7		*
		ES	Z	35.4			.7		
5 NOV	S11	EP	Z	5 18 10.7					

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
5 NOV	S4	EP	Z	6 27 37.1	979.9				*
5 NOV	S7	EP	Z	6 27 52.8	833.3	.2	2.3		*
		ES	Z	28 20.1			2.3		
5 NOV	S9	EP	Z	6 28 14.7	645.2	.3			*
		E	Y	23.6					
		E	Y	55.0					
5 NOV	S11	EP	Z	6 28 19.4	322.6	.2	3.9		*
		ES	Z	29 4.8			3.9		
5 NOV	S13	EP	Z	6 28 35.4			4.9		*
		ES	Y	29 32.1			4.9		
5 NOV	S12	EP	Z	6 28 36.5	121.0	.2	5.1		*
		E	Z	44.5			5.1		
		ES	X	29 34.8			5.1		
5 NOV	S11	EP	Z	6 42 59.3	362.9	.2			
5 NOV	S9	EP	Z	6 43 9.8	80.6	.2	.9		
		ES	Y	21.7			.9		
5 NOV	S7	E	Z	6 56 18.8					
5 NOV	S9	E	Z	6 58 4.6					
5 NOV	S13	EP	Z	7 2 38.3			2.6		
		ES	Y	3 8.8			2.6		
5 NOV	S11	EP	Z	7 2 57.3					
5 NOV	S11	EP	Z	7 49 11.5	161.3	.2	.5		
		ES	Z	17.7			.5		
5 NOV	S9	EP	Z	7 49 21.2	80.6	.2	1.0		
		ES	Y	34.4			1.0		
5 NOV	S11	EP	Z	8 29 43.1	282.3	.3	.5		*
		ES	Z	48.6			.5		
5 NOV	S13	EP	Z	8 29 50.4			1.2		*
		ES	Y	30 6.0			1.2		
5 NOV	S9	EP	Z	8 30 1.6	121.0	.2	1.5		*
		ES	Y	20.0			1.5		
		E	Y	31 20.5			1.5		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
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5 NOV 9 2 42.0 45.1N 151.0E OBS PRELIMINARY EPICENTER -- (6)  
H = 40 KM

5 NOV	S9	EP	Z	9 2 57.0	1.70	.4	.9	277	-.1
		E	Z	3 8.8			.9	277	
5 NOV	S7	EP	Z	9 2 57.8			.9	92	-.8
5 NOV	S11	EP	Z	9 3 7.5			1.6	211	-1.3
		E	Z	25.6			1.6	211	
5 NOV	S4	EP	Z	9 3 19.4	161.3	.2	2.4	79	-1.3
		ES	Y	48.7			2.4	79	.8
5 NOV	S12	EP	Z	9 3 22.4			2.7	241	-2.1
		ES	X	50.9			2.7	241	-5.7
		E	P	5 56.9			2.7	241	
5 NOV	S13	EP	Z	9 3 25.6			2.9	209	-1.7
		ES	Y	57.9			2.9	209	-3.9

5 NOV	S4	EP	Z	9 17 16.4	201.6	.2	1.2		
		ES	Y	31.6			1.2		

5 NOV	S4	EP	Z	9 35 11.8	161.3	.2	1.2		
		ES	Y	26.9			1.2		

5 NOV	S11	EP	Z	9 54 21.3			5.0		
		ES	Z	55 18.6			5.0		

5 NOV	S9	EP	Z	9 54 26.8	201.6	.2	5.2		
		E	Z	34.9			5.2		
		ES	Y	55 26.6			5.2		

5 NOV	S7	EP	Z	9 59 47.4			.5		
		ES	X	53.2			.5		

5 NOV	S4	EP	Z	10 0 33.1	121.0	.2	3.4		
		ES		1 12.9			3.4		

5 NOV	S9	EP	Z	10 1 9.0	241.9	.3	R		
		ES	Y	2 15.1			R		

5 NOV	S11	EP	Z	10 1 11.8			5.9		
		ES	Z	2 19.6			5.9		

5 NOV	S12	EP	Z	10 1 27.4	121.0	.2	R		
		E	Z	34.9			R		
		FS	X	2 47.8			R		



DAY	STA	PHASE	C	TIME		AMP	PER	DIST	AZI	RES
5 NOV	S7	EP	Z	10	9	19.6	32.1	.1	1.1	•
		ES	X			33.6			1.1	
5 NOV	S9	EP	Z	10	9	19.7	322.6	.3	.9	•
		ES	Y			31.6			.4	
5 NOV	S11	EP	Z	10	9	32.1			1.2	•
		ES	Z			47.2			1.2	
5 NOV	S7	EP	Z	10	12	59.6	80.1	.2	.8	
		ES	X		13	10.8			.8	
5 NOV	S9	EP	Z	10	53	1.9	241.9	.2	.9	
		ES	Y			13.5			.9	
		E	Y		54	6.3			.9	
5 NOV	S11	EP	Z	10	53	13.4			2.0	
		ES	Z			37.7			2.0	
5 NOV	S13	EP	Z	11	13	21.0			R	
		ES	Y		14	38.3			R	
5 NOV	S12	E	Z	11	13	27.5	80.6	.2		
		E	X		14	47.8				
5 NOV	S9	EP	Z	11	13	54.7	121.0	.3	R	
		ES	Y		15	33.9			R	
5 NOV	S9	EP	Z	11	59	26.7	161.2	.3	R	
		ES	Y	12	0	52.0			R	
5 NOV	S11	EP	Z	11	59	27.3				
5 NOV	S11	EP	Z	12	41	58.0				



DAY	STA	PHASE	C	TIME			AMP	PER	DIST	AZI	RES
5 NOV	S12	EP	Z	13	0	8.8			R		*
		ES	X		1	32.3			R		
5 NOV	S13	EP	Z	13	0	55.8	685.5	.2	1.0		*
		E	Z			59.0			1.0		
		ES	Y		1	9.5			1.0		
5 NOV	S11	+IP	Z	13	1	4.7	322.6	.2	1.6		*
		ES	Z			24.4			1.6		
5 NOV	S9	EP	Z	13	1	20.9	322.6	.2	2.6		*
		ES	Y			51.8			2.6		
5 NOV	S7	EP	Z	13	1	27.6	64.1	.2	.5		*
		E	X			33.6			.5		
		ES	X		2	6.2			.5		
5 NOV	S4	EP	Z	13	1	44.4	322.6	.2	4.4		*
		ES	Y		2	35.2			4.4		
5 NOV	S7	EP	Z	13	27	19.2	161.3	.2	L		
		EP	X			28.3			L		
5 NOV	S4	EP	Z	14	10	1.1			3.3		
		ES	Y			39.3			3.3		
5 NOV	S7	EP	Z	14	42	11.0	32.1	.1	.5		
		ES	X			17.4			.5		
5 NOV	S11	EP	Z	14	48	5.3	201.6	.4			
5 NOV	S7	EP	Z	14	57	59.1	201.6	.2	.8		*
		ES	X		58	9.9			.8		
5 NOV	S9	EP	Z	14	58	1.2	564.5	.2	.9		*
		ES	Y			12.7			.9		
		E	Z		59	3.2			.9		
5 NOV	S11	EP	P	14	58	11.3			1.6		*
		ES	Z			30.9			1.6		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
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5 NOV 15 17 20.0 46.9N 153.3E OBS PRELIMINARY EPICENTER -- (6)  
H = 60 KM

5 NOV	S11	+IP	Z	15 17 32.7	1.3U	.2	.5	27	.7
		E	Z	40.6			.5	27	
5 NOV	S13	EP	Z	15 17 35.8	725.8	.2	.8	206	-1.0
		E	Z	39.1			.8	206	
		ES	Y	46.6			.8	206	-2.0
5 NOV	S12	EP	Z	15 17 43.5	362.9	.2	1.4	289	-.2
		ES	X	18 1.9			1.4	289	1.0
		E	P	45.7			1.4	289	
5 NOV	S9	EP	Z	15 17 50.6	645.2	.2	1.9	6	-.5
		ES	Y	18 11.5			1.9	6	-2.5
		E	Z	19 17.1			1.9	6	
5 NOV	S7	EP	Z	15 18 .6	64.1	.2	2.6	47	-.5
		ES	X	34.0			2.6	47	1.8
5 NOV	S4	EP	Z	15 18 19.0	32.1	.2	4.0	55	-1.9
		ES	Y	19 5.4			4.0	55	-2.1

5 NOV 16 6 20.0 45.0N 131.7E OBS PRELIMINARY EPICENTER -- (5)  
H = 35 KM

5 NOV	S7	EP	Z	16 6 35.1			.8	99	-.4
5 NOV	S9	-IP	Z	16 6 37.2	999.9		.9	270	.6
5 NOV	S11	EP	Z	16 6 46.9	403.2	.2	1.8	212	-1.6
		E	Z	7 9.6			1.8	212	
5 NOV	S4	EP	Z	16 6 55.4	241.9	.3	2.3	81	-1.0
		ES	Y	7 12.1			2.3	81	-11.7
5 NOV	S12	EP	Z	16 7 1.8	483.9	.2	2.8	240	-2.3
		E	Z	8.1			2.8	240	
		ES	X	32.0			2.8	240	-5.6
		E	P	9 20.7			2.8	240	
		E	P	51.3			2.8	240	
5 NOV	S13	EP	Z	16 7 7.8	161.3	.2	3.0	210	.8
		ES	Y	43.3			3.0	210	.5

5 NOV	S9	EP	Z	16 53 27.8	80.1	.2	2.5		
		ES	Y	57.3			2.5		
5 NOV	S11	EP	Z	16 53 29.0			1.7		
		ES	Z	50.0			1.7		
5 NOV	S11	EP	Z	16 56 7.9					

DAY	SYA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
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5 NOV 17 4 34.0 47.0N 152.9E OBS PRELIMINARY EPICENTER -- (5)  
H = 0 KM

5 NOV	S11	+IP	Z	17 4 46.6	1.0U	.1	.5	352	-1.4
		E	Z	54.1			.5	352	
5 NOV	S13	EP	Z	17 4 52.7	241.9	.1	.9	224	-1.2
		E	Z	55.9			.9	224	
		ES	Y	5 4.9			.9	224	-2.1
5 NOV	S12	EP	Z	17 4 59.3	322.6	.2	1.7	290	-5.1
		ES	X	5 18.4			1.7	290	3.9
5 NOV	S7	EP	Z	17 5 13.4			2.5	41	-3.1
		E	X	44.7			2.5	41	
5 NOV	S4	EP	Z	17 5 32.1	32.1	.2	3.9	52	-3.8
		ES	Y	6 14.8			3.9	52	-4.9

5 NOV	S11	EP	Z	17 18 3.4			.5		
		ES	Z	11.4			.5		
5 NOV	S7	EP	Z	18 50 50.4	64.1	.2	.5		
		ES	Y	57.9			.5		
5 NOV	S11	EP	Z	19 33 13.7	483.9	.2	.4		
		ES	Z	17.9			.4		
5 NOV	S11	EP	Z	20 46 10.1					
5 NOV	S11	EP	Z	21 35 29.3					

5 NOV 23 24 3.0 43.1N 148.1E KURILE EXPLOSION  
H = 0 KM

5 NOV	S7	EP	Z	23 24 48.2	241.9	.4	2.7	221	.2
		ES	X	25 8.7			2.7	221	12.4
		ET	Z	27 21.0			2.7	221	
5 NOV	S9	EP	Z	23 25 5.1	201.6	.4	4.0	243	-1.9
		ET	P	29 5.8			4.0	243	
5 NOV	S11	EP	P	23 25 17.7			4.9	227	-1.5
		ET	P	30 8.5			4.9	227	
5 NOV	S12	EP	Z	23 25 32.5	161.3	.3	6.1	239	-3.5
		F	P	31 34.0			6.1	239	
			P	36.4			6.1	239	



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
5 NOV	S4	EP	Z	23 24 44.1	241.9	.4			

5 NOV 23 59 42.0 44.2N 149.3E OBS PRELIMINARY EPICENTER -- (6)  
H = 15 KM

5 NOV	S4	EP	Z	23 59 55.5	999.9		.8	129	-2.5
6 NOV	S7	EP	Z	0 0 3.2	403.2	.4	1.3	223	-2.2
6 NOV	S9	EP	Z	0 0 24.9	967.7	.3	2.8	254	-1.8
		ES	Y	53.4			2.8	254	6.3
6 NOV	S11	EP	Z	0 0 34.3	725.8	.1	3.5	230	-2.6
		E	Z	1 11.5			3.5	230	
6 NOV	S12	EP	Z	0 0 50.1	161.3	.4	4.7	243	-4.5
		E	Z	56.8			4.7	243	
		ES	X	1 38.2			4.7	243	-13.5
		E	P	4 43.5			4.7	243	
		F	P	5 14.1			4.7	243	
6 NOV	S13	EP	Z	0 0 51.0	80.6	.4	4.7	224	-3.1
		ES	Y	1 42.3			4.7	224	-8.4

6 NOV	S7	EP	Z	0 8 51.0	48.1	.1	1.4		
		ES	X	9 8.6			1.4		

6 NOV	S11	EP	Z	1 2 10.4					
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6 NOV	S13	EP	Z	1 2 30.9	322.6	.2	.5		
		E	Z	34.2			.5		
		ES	Y	50.5			.5		

6 NOV	S11	EP	Z	2 10 0.0					
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6 NOV	S13	EP	Z	3 33 2.4	725.8	.2	.6		*
		ES	Y	10.6			.6		

6 NOV	S12	EP	Z	3 33 8.8	121.0	.2	1.0		*
		ES	X	22.3			1.0		
		E	P	34 12.1			1.0		

6 NOV	S11	EP	Z	3 33 18.0					*
		ES	Z	33.8					
		F	P	38 36.6					



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
6 NOV	3 33	3.0	43.6N	148.3E	KURILE EXPLOSION H = 0 KM				
6 NOV	S4	EP	Z	3 33 25.9	483.9	.3	1.1	187	.6
		ES	Y	33.6			1.1	187	-6.3
		ET	Y	52.2			1.1	187	
6 NOV	S7	EP	Z	3 33 41.7	403.2	.4	2.2	227	.4
		ES	X	49.7			2.2	227	2.9
		E	P	35 46.7			2.2	227	
6 NOV	S9	EP	Z	3 33 59.7	362.9	.3	3.7	249	-2.2
		E	P	37 41.7			3.7	249	
6 NOV	S12	E	P	3 40 7.9					
		E	P	8.9					
6 NOV	3 50	11.0	45.7N	151.0E	KURILE IS H = 33 KM MAG = 4.5				
6 NOV	S7	EP	Z	3 50 21.8	1.0U	.4	.7	31	-1.8
6 NOV	S11	+IP	Z	3 50 33.7			1.6	241	-3.6
6 NOV	S4	EP	Z	3 50 42.4	685.5	.5	2.0	59	-1.3
		E	Z	44.5			2.0	59	
		ES	Y	53.9			2.0	59	-14.2
6 NOV	S13	EP	Z	3 50 51.9	564.5	.3	2.8	226	-2.1
		E	Z	51 24.1			2.8	226	
6 NOV	S12	EP	Z	3 50 49.3	1.7U	.2	3.0	257	-8.1
		E	Z	51 20.8			3.0	257	
6 NOV	S9	EP	Z	3 50 25.6	999.9				
6 NOV	S11	+IP	Z	4 8 11.8	604.8	.1	1.1		
		ES	Z	26.2			1.1		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
6 NOV	S13	EP	Z	5 7 4.3			1.0		*
		ES	Y	19.6			1.0		
6 NOV	S12	EP	Z	5 7 15.4			1.7		*
		ES	X	36.7			1.7		
		E	P	8 49.7			1.7		
6 NOV	S11	EP	Z	5 7 24.6	161.3	.2			*
		ES	Z	51.6					
6 NOV	S9	EP	Z	5 7 40.5	201.6	.2	3.1		*
		ES	Y	8 17.3			3.1		
6 NOV	S9	EP	Z	5 15 31.6	282.3	.3	.3		
		ES	Y	35.5			.3		
6 NOV	S7	EP	Z	5 15 52.5			2.0		
		ES	X	16 16.9			2.0		
6 NOV	S13	EP	Z	5 22 1.9			.5		
		F	Z	5.1			.5		
		ES	Y	9.3			.5		
6 NOV	S7	EP	Z	5 25 49.3	604.8	.2	.5		
		ES	X	55.5			.5		
6 NOV	S11	EP	Z	7 55 55.3	48.1	.3			*
6 NOV	S13	EP	Z	7 56 26.8	241.9	.1	.5		*
		ES	Y	33.9			.5		
		E	Y	59 28.8			.5		
6 NOV	S12	EP	Z	7 56 31.1	161.3	.2	.9		*
		ES	X	42.9			.9		
6 NOV	S11	EP	Z	7 59 15.6					
6 NOV	S4	EP	Z	7 59 57.5	121.0	.1	.6		
		ES	Y	8 0 5.7			.6		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
6 NOV	S9	EP	Z	8 6 35.8	201.6	.2	.5		*
		ES	Y	42.9			.5		
6 NOV	S11	EP	Z	8 6 44.9					*
6 NOV	S12	EP	Z	8 6 48.1			1.4		*
		ES	X	7 5.5	80	2	1.4		

6 NOV	S7	EP	Z	8 50 12.4	403.2	.4	.5		
		ES	X	19.6			.5		

6 NOV 9 0 31.0 47.4N 154.7E OBS PRELIMINARY EPICENTER -- (4)  
H = 85 KM

6 NOV	S13	EP	Z	9 0 46.9	846.8	.3	.6	114	
		E	Z	49.0			.6	114	
		ES	Y	56.7			.6	114	-1.5
6 NOV	S12	EP	Z	9 0 50.0	362.9	.2	1.0	341	-.7
		ES	X	1 1.0			1.0	341	-4.5
6 NOV	S11	EP	Z	9 0 56.4			1.5	52	-.5
		E	Z	1 12.0			1.5	52	
6 NOV	S9	EP	Z	9 1 11.8	201.6	.2	2.7	26	-1.2
		E	Z	20.3			2.7	26	
		ES	Y	37.0			2.7	26	-7.6

6 NOV	S13	EP	Z	11 31 8.4			.5		
		ES	Y	14.2			.5		

6 NOV	S4	EP	Z	11 43 52.4			.5		
		ES	Y	44 .4			.5		

6 NOV	S11	EP	Z	12 7 8.0					
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6 NOV	S4	EP	Z	12 22 55.2			1.2		
		ES	Y	23 10.3			1.2		

6 NOV	S11	EP	Z	12 48 56.7			1.4		
		ES	Z	49 14.2			1.4		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	R/S
6 NOV	S13	EP	Z	13 2 17.4			2.2		
		ES	Y	43.6			2.2		
6 NOV	S12	EP	Z	13 2 29.7			3.1		*
		ES	X	3 6.3			3.1		
6 NOV	S11	EP	Z	13 2 30.6			3.7		*
		ES	Z	3 13.3			3.7		
6 NOV	S9	EP	Z	13 2 49.7			4.4		*
		ES	Y	3 40.8			4.4		
6 NOV	S10	E	Z	13 4 11.9					
6 NOV	S13	EP	P	13 22 36.4			2.6		
		ES	Y	23 6.9			2.6		
6 NOV	S11	EP	Z	13 22 51.8					
6 NOV	S9	E	Z	13 29 50.3					
		E	Y	32 24.3					
6 NOV	S7	EP	Z	13 31 58.2	64.1	.1	.7		
		ES	X	32 8.0			.7		
6 NOV	S11	EP	Z	13 32 13.3			1.6		
		ES	Z	33.1			1.6		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
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6 NOV 14 15 17.0 45.2N 152.3E OBS PRELIMINARY EPICENTER -- (7)  
H = 0 KM

6 NOV	S9	EP	Z	14 15 27.0	201.6	.3	.5	292	-4.4
		E	Z	31.8			.5	292	
		E	Z	39.3			.5	292	
6 NOV	S7	EP	Z	14 15 40.8	241.9	.3	1.3	86	-1.0
		ES	X	51.5			1.3	86	-4.0
6 NOV	S11	EP	Z	14 15 42.6	362.9	.2	1.4	201	-1.0
		E	Z	59.6			1.4	201	
6 NOV	S10	EP	Z	14 15 56.0	161.3	.2	2.3	315	-.2
		E	X	16 23.6			2.3	315	
6 NOV	S12	EP	Z	14 15 56.2	80.6	.2	2.4	239	-1.6
		E	Z	16 5.2			2.4	239	
		ES	X	22.9			2.4	239	20.4
		E	P	18 24.5			2.4	239	
6 NOV	S13	EP	Z	14 16 1.1			2.7	204	-1.1
		ES	Y	30.4			2.7	204	19.7
6 NOV	S4	EP	Z	14 16 .6			2.8	78	-2.6
		ES	Y	29.6			2.8	78	16.2

6 NOV S11 EP Z 15 4 1.1 524.2 .3

6 NOV 15 22 49.0 44.3N 150.2E OBS PRELIMINARY EPICENTER -- (5)  
H = 0 KM

6 NOV	S7	EP	Z	15 23 5.4	403.2	.4	.9	195	-2.7
		ES	X	17.7			.9	195	-2.1
6 NOV	S4	EP	Z	15 23 12.9	201.6	.4	1.3	107	-1.2
		ES	Y	30.1			1.3	107	2.6
6 NOV	S9	EP	Z	15 23 24.3	121.0	.2	2.1	252	-1.7
		ES	Y	47.0			2.1	252	15.0
6 NOV	S11	EP	Z	15 23 35.6			3.0	223	-2.4
6 NOV	S10	EP	Z	15 23 40.8			3.2	283	-1.2
		ES	X	24 17.1			3.2	283	11.5

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
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6 NOV 15 37 44.0 46.6N 152.6E OBS PRELIMINARY EPICENTER -- (4)  
H = 80 KM

6 NOV	S11	EP	Z	15 37 56.2			.3	290	-.2
		E	Z	38 2.3			.3	290	
6 NOV	S13	EP	Z	15 38 8.1	121.0	.2	1.4	219	-.2
		E	Z	16.8			1.4	219	
		ES	Y	25.3			1.4	219	-.5
6 NOV	S12	EP	Z	15 38 13.0			1.8	275	-.9
		ES	X	35.7			1.8	275	.1
6 NOV	S10	EP	Z	15 38 32.0			3.3	335	-2.5
		ES	X	39 11.1			3.3	335	-1.5

6 NOV	S12	EP	Z	18 15 8.4	80.6	.2	.9		
		ES	X	20.9			.9		

6 NOV	S11	EP	Z	18 20 2.5	266.1	.3	.5		*
		ES	Z	9.8			.5		
6 NOV	S13	EP	Z	18 20 15.0			1.4		*
		ES	Y	32.2			1.4		
6 NOV	S9	E	Z	18 20 32.8					*

6 NOV	S4	EP	Z	18 31 49.3	80.6	.2	1.1		
		E	Z	54.4			1.1		
		ES	Y	32 3.1			1.1		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
6 NOV	S13	EP	Z	19 21 51.2	605.5	.2	1.0		*
		ES	Z	22 4.5			1.0		
6 NOV	S11	EP	Z	19 21 54.7	1.2U	.2			*
6 NOV	S12	EP	Z	19 22 1.1	2.3U	.3			*
6 NOV	S9	EP	Z	19 22 10.1	846.8	.2	2.2		*
		ES	Y	36.7			2.2		
6 NOV	S7	EP	Z	19 22 17.8			2.9		*
		ES	X	52.1			2.9		
6 NOV	S10	-IP	Z	19 22 30.8	604.8	.3	3.7		*
		ES	X	23 13.9			3.7		
		E	X	26 24.0			3.7		
6 NOV	S4	EP	Z	19 22 34.5			4.0		*
		ES	Y	23 20.5			4.0		
6 NOV	S4	EP	Z	20 2 44.0			.6		
		ES	Y	52.3			.6		
6 NOV	S11	EP	Z	20 29 40.3					
6 NOV	S13	EP	Z	20 29 43.0	241.9	.3	.6		
		E	Z	46.2			.6		
		ES	Y	51.6			.6		
6 NOV	S13	EP	P	21 9 4.1			1.4		
		ES	Y	21.2			1.4		
6 NOV	S11	EP	Z	21 9 15.5					
6 NOV	S7	EP	Z	21 29 25.6	32.1	.1	1.1		*
		ES	X	40.2			1.1		
6 NOV	S9	EP	Z	21 29 27.7	161.3	.2	.9		*
		ES	Y	39.5			.9		
		E	Y	30 37.5			.9		
6 NOV	S11	EP	Z	21 29 36.7					*
6 NOV	S10	EP	Z	21 29 56.9			1.9		*
		ES	X	30 20.5			1.9		
6 NOV	S11	EP	Z	21 36 18.9					

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
6 NOV	S4	EP	Z	21 55 12.1	604.8	.2	.5		*
		ES	Y	20.0			.5		
6 NOV	S7	EP	Z	21 55 22.3	32.1	.2	1.4		*
		ES	X	40.0			1.4		
6 NOV	S11	EP	Z	21 55 32.8					*
6 NOV	S9	EP	Z	21 55 43.2	161.3	.3	2.5		*
		ES	Y	56 12.9			2.5		
6 NOV	S9	EP	Z	22 30 56.6	121.0	.3	.8		
		ES	Y	31 7.4			.8		
6 NOV	S11	EP	Z	22 31 3.6					
6 NOV	S7	EP	Z	22 32 .4			1.6		
		ES	X	19.8			1.6		
5 NOV	S9	EP	Z	22 34 55.2	80.6	.2	.9		
		ES	Y	35 7.2			.9		
6 NOV	S13	EP	Z	22 42 5.1			1.3		
		ES	Y	21.6			1.3		
6 NOV	S13	E	Y	23 28 30.6					
6 NOV	S7	EP	Z	23 36 47.5			1.2		
		ES	X	37 3.2			1.2		
6 NOV	S9	EP	Z	23 37 2.0	80.6	.2	2.0		
		ES	Y	25.1			2.0		
7 NOV	S11	-1P	Z	0 43 8.8			.5		*
		ES	Z	14.8			.5		
7 NOV	S13	EP	Z	0 43 18.8	121.0	.2	1.0		*
		ES	Y	32.2			1.0		
7 NOV	S12	EP	Z	0 43 23.2					*
		ES	X	41.5					
7 NOV	S9	EP	Z	0 43 26.6	80.6	.2	1.4		*
		ES	Y	44.0			1.4		
		E	Z	44 42.9			1.4		
7 NOV	S7	EP	Z	0 43 35.1			2.8		*
		ES	X	44 8.8			2.8		
7 NOV	S10	EP	Z	0 43 54.3			2.4		*
		ES	X	44 23.2			2.4		

DAY	STA	PHASE	C	TIME		AMP	PER	DIST	AZI	RES
7 NOV	S9	EP	Z	1	19	52.0		2.5		
		ES	Y	20	21.7			2.5		
7 NOV	S7	EP	Z	2	17	37.9	64.1	.1	.6	
		ES	X			46.5		.6		
7 NOV	S7	EP	Z	3	38	27.7	32.1	.1	.6	
		ES	X			36.4		.6		
7 NOV	S7	EP	Z	3	39	49.8			.5	
		ES	X			57.1		.5		

7 NOV 4 3 2.0 43.0N 149.2E KURILE EXPLOSION  
H = 0 KM

7 NOV	S4	EP	Z	4	3	35.0	201.6	.4	1.8	163	1.1
		ES	Y			41.1			1.8	163	-1.9
		E	P	5		1.1			1.8	163	
7 NOV	S7	EP	Z	4	3	41.0			2.3	204	-1.1
		E	Z			41.4			2.3	204	
		E	X	5		38.1			2.3	204	
		ET	P			52.1			2.3	204	
7 NOV	S9	EP	Z	4	3	54.7	282.3	.3	3.4	235	-2.5
		E	Z		4	32.8			3.4	235	
		ET	P		7	14.0			3.4	235	
7 NOV	S11	EP	Z	4	4	9.3			4.4	219	-2.5
		ET	P		8	27.3			4.4	219	
7 NOV	S12	EP	Z	4	4	23.0	161.3	.4	5.5	233	-4.0
		E	Z			30.1			5.5	233	
		ES	X	5		31.0			5.5	233	-2.5
		ET	P		9	48.2			5.5	233	
7 NOV	S13	EP	Z	4	4	27.2			5.7	217	-2.6
		ET	P		10	11.5			5.7	217	

7 NOV	S10	-IP	Z	4	8	.1	483.9	.1	L		
		E	Y		10	27.0			L		
7 NOV	S4	EP	Z	4	27	47.2			1.3		
		ES	Y		28	4.1			1.3		
7 NOV	S4	EP	Z	4	52	33.7			1.2		
		ES	Y			49.1			1.2		



DAY	STA	PHASE	C	TIME	AMP	PER	DIS	AZI	RES
7 NOV	S13	EP	P	5 19 23.4			.7		
		ES	Y	33.4			.7		
7 NOV	S4	EP	Z	5 30 25.4			1.3		
		ES	Y	42.3			1.3		
7 NOV	S9	EP	Z	6 17 37.5			1.7		
		ES	Y	58.4			1.7		
7 NOV	S7	EP	Z	6 17 46.7			1.1		
		ES	X	18 .6			1.1		
7 NOV	S4	EP	Z	6 21 37.9			.5		
		ES	Y	45.4			.5		
7 NOV	S4	EP	Z	7 4 59.2			1.3		
		ES	Y	5 15.9			1.3		
7 NOV	S11	EP	Z	7 6 24.6					

7 NOV 8 2 25.0 45.8N 145.2E OBS PRELIMINARY EPICENTER -- (5)  
H = 0 KM

7 NOV	S7	EP	Z	8 2 59.9	201.6	.2	1.1	306	1.8
		ES	X	3 21.9			1.1	306	9.4
7 NOV	S4	EP	Z	8 2 56.3	725.8	.3	1.2	24	-3.0
		ES	Y	3 13.7			1.2	24	.5
7 NOV	S11	EP	Z	8 3 20.5			2.7	257	-3.3
		E	Z	57.1			2.7	257	
7 NOV	S9	EP	Z	8 3 18.3			2.8	288	-3.4
		ES	Y	53.0			2.8	288	20.2
7 NOV	S10	EP	Z	8 3 39.6			4.4	301	-5.0
		ES	X	4 29.2			4.4	301	-10.3

7 NOV	S13	E	Y	8 22 32.6					
		E	Z	31 10.0	403	3			
		ES	Y	22.0					

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
7 NOV	8 30	43.0	46.2N	153.6E	OBS PRELIMINARY EPICENTER -- (7) H = 0 KM				
7 NOV	S11	-IP	Z	8 30 52.9	999.9		.5	126	-4.2
7 NOV	S12	EP	Z	8 31 4.7	2.5U	.3	1.1	257	-1.2
7 NOV	S9	EP	Z	8 31 5.9	999.9		1.3	19	-2.0
7 NOV	S7	EP	Z	8 31 23.8	846.8	.5	2.4	63	-0.7
		E	X	51.9			2.4	63	
7 NOV	S10	EP	Z	8 31 25.3	80.6	.2	2.7	345	-2.5
		ES	X	37.7			2.7	345	1.9
		E	X	53.6			2.7	345	
		E	P	34 16.5			2.7	345	
7 NOV	S4	EP	Z	8 31 43.0	645.2	.3	3.9	65	-2.5
		F	Y	58.6			3.9	65	
		ES	Y	32 25.4			3.9	65	-5.4
7 NOV	S11	E	Z	9 7 22.0					
7 NOV	S11	EP	Z	9 20 13.6			1.1		
		ES	Z	27.7			1.1		
7 NOV	S4	EP	Z	9 56 34.1	80.6	.2	.9		
		ES	Y	42.1			.5		
7 NOV	S9	EP	Z	10 49 54.9					
		ES	Y	51 32.4					
7 NOV	S11	EP	Z	10 50 56.7	161.3	.2	.4		*
		ES	Z	51 1.9			.4		
7 NOV	S13	EP	P	10 51 6.1			1.2		*
		ES	Y	21.2			1.2		
7 NOV	S12	EP	Z	10 51 8.8	80.6	.2	1.2		*
		ES	X	24.1			1.2		
7 NOV	S7	EP	Z	10 53 30.2	403.2	.2	.6		
		ES	X	38.7			.6		
7 NOV	S12	EP	Z	10 53 42.2	322.6	.2	.5		
		ES	X	49.3			.5		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
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7 NOV 11 24 17.0 43.9N 140.9E OBS PRELIMINARY EPICENTER -- (5)  
H = 0 KM

7 NOV	S4	EP	Z	11 24 31.5	80.6	.2	.8	159	-4.3
		ES	Y	38.1			.8	159	-8.9
7 NOV	S7	EP	Z	11 24 47.3	322.6	.2	1.7	224	-0.6
		ES	X	25 7.7			1.7	224	9.9
7 NOV	S9	EP	Z	11 25 6.9	80.6	.3	3.1	251	-1.7
		ES	Y	38.4			3.1	251	9.2
7 NOV	S11	EP	Z	11 25 16.4	32.1	.2	3.9	230	-2.9
7 NOV	S10	EP	Z	11 25 20.6			4.1	276	-2.0
		ES	Y	26 7.8			4.1	276	-5.3

7 NOV	S9	E	Z	11 45 12.4					
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7 NOV	S11	EP	Z	12 2 30.5					
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7 NOV	S11	+IP	Z	12 19 6.2	1.30	.2			
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7 NOV	S9	EP	Z	12 20 23.7			1.2		
		ES	Y	39.3			1.2		

7 NOV	S11	+IP	Z	12 32 .6	887.1	.2	.5		
		ES	Z	6.5			.5		

7 NOV	S9	EP	Z	13 32 16.9			1.5		
		ES	Y	36.0			1.5		

7 NOV	S9	EP	Z	14 5 50.3					
		E	Y	6 8.0					
		E	Y	7 21.4					

7 NOV	S7	EP	Z	14 5 52.9			1.5		
		ES	X	6 11.9			1.5		

7 NOV	S11	EP	Z	14 22 5.7	201.6	.2	.5		
		ES	Z	11.3			.5		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
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7 NOV 14 27 26.0 44.0N 148.3E OBS PRELIMINARY EPICENTER -- (6)  
H = 105 KM

7 NOV	S4	EP	Z	14 27 44.0	655.2	.4	.7	191	
		ES	Y	54.8			.7	191	-2.7
7 NOV	S7	EP	Z	14 27 58.7	201.6	.2	1.9	235	
		ES	X	28 21.8			1.9	235	-0.8
7 NOV	S9	EP	Z	14 28 18.5	362.9	.2	3.5	255	-1.3
		E	Z	26.5			3.5	255	
		ES	Y	52.9			3.5	255	-7.6
7 NOV	S11	EP	Z	14 28 27.5	282.3	.2	4.2	235	-1.1
7 NOV	S10	EP	Z	14 28 32.4			4.6	277	-1.7
		E	Z	29 18.1			4.6	277	
		ES	X	19.8			4.6	277	-6.6
7 NOV	S12	EP	Z	14 28 43.6			5.5	246	-2.6
		ES	X	29 38.0			5.5	246	-10.2

7 NOV 14 47 47.0 44.0N 148.5E OBS PRELIMINARY EPICENTER -- (4)  
H = 110 KM

7 NOV	S7	EP	Z	14 48 17.7			1.8	233	-0.8
		ES	X	42.1			1.8	233	.6
7 NOV	S9	EP	Z	14 48 36.9			3.4	254	-2.1
		ES	Y	49 23.4			3.4	254	5.1
7 NOV	S11	EP	Z	14 48 45.9			4.0	233	-2.2
		E	Z	49 40.8			4.0	233	
7 NOV	S10	EP	Z	14 48 50.4			4.4	277	-2.8
		ES	Y	49 44.5			4.4	277	.5

7 NOV	S7	EP	Z	14 54 27.0				R	
		E	X	55 30.8				R	
		ES	X	56 31.8				R	
7 NOV	S9	EP	Z	14 54 46.2	80.6	.2		R	
		ES	Y	56 3.9				R	
7 NOV	S12	EP	Z	14 55 2.2	121.0	.2		R	
		ES	X	56 33.7				R	
7 NOV	S9	EP	Z	15 12 42.7			4.7		
		FS	Y	13 37.3			4.7		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
7 NOV	S7	EP	Z	15 31 12.8	80.6	.5	1.6		*
		ES	X	32.2			1.6		
7 NOV	S9	EP	Z	15 31 30.5			2.4		*
		ES	Y	59.4			2.4		
7 NOV	S10	EP	Z	15 31 51.8			4.1		*
		ES	X	32 39.2			4.1		

7 NOV	S4	EP	Z	15 47 57.9			1.4		
		ES	Y	48 15.6			1.4		
7 NOV	S11	EP	Z	16 19 29.4	80.6	.2	.3		
		ES	Z	33.2			.3		
7 NOV	S7	EP	Z	17 1 55.4			1.1		
		ES	X	2 9.3			1.1		
7 NOV	S11	EP	Z	17 47 58.2			.6		
		ES	Z	48 6.4			.6		

7 NOV 18 41 1.0 46.9N 151.3E KURILE IS  
H = 57 KM MAG = 4.6

7 NOV	S11	-IP	Z	18 41 30.7	999.9		1.2	290	-7.8
7 NOV	S7	EP	Z	18 41 38.9	999.9		1.8	17	-7.6
7 NOV	S13	EP	Z	18 41 39.2	999.9		1.8	247	-7.4
		ES	Z	42 1.6			1.8	247	31.8
7 NOV	S9	+IP	Z	18 41 40.3	999.9		2.2	329	3.7
7 NOV	S12	EP	Z	18 41 46.1	3.1U	.3	2.7	281	2.8
7 NOV	S4	EP	Z	18 41 53.5	999.9		3.0	41	6.6
		E	Z	42 27.9			3.0	41	
7 NOV	S10	EP	Z	18 42 3.4	725.8	.2	4.0	326	1.9
		E	X	5.3			4.0	326	
		ES	X	40.7			4.0	326	-7.1

DAY	STA	PHASE	C	TIME	HYP	PER	DIST	AZI	RES
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7 NOV 20 6 22.0 46.0N 153.0E OBS PRELIMINARY EPICENTER -- (4)  
H = 33 KM

7 NOV	S11	EP	Z	20 6	33.2		.5	180	.5
		E	Z	7	8.6		.5	180	
7 NOV	S9	EP	Z	20 6	38.4	645.2	.2	1.0	-1.3
		F	Z		46.5		1.0		
		E	Y	7	16.9		1.0		
7 NOV	S12	EP	Z	20 6	48.1	161.3	.2	1.6	254 .1
		E	X	7	35.1		1.6	254	
7 NOV	S10	EP	Z	20 7	1.1	161.3	.1	2.6	335 -1.8
		E	X		2.7		2.6	335	

7 NOV	S10	EP	Z	20 7	57.3	80.6	.1	.2	
		ES	Y		59.0			.2	

7 NOV	S11	EP	Z	20 32	8.7	80.6	.1	.4	
		ES	Z		13.2			.4	

7 NOV	S11	EP	Z	21 15	27.8				
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7 NOV	S12	EP	Z	21 15	38.9			1.2	
		ES	X		54.7			1.2	

7 NOV	S9	EP	Z	21 15	45.7	121.0	.2	1.5	
		ES	Y	16	4.2			1.5	

7 NOV	S11	EP	Z	22 33	2.6			1.2	
		ES	Z		18.2			1.2	

7 NOV	S4	EP	Z	23 25	4.8	282.3	.2	.5	*
		FS	Y		11.3			.5	

7 NOV	S7	EP	Z	23 25	19.4			1.5	*
		ES	X		38.2			1.5	

7 NOV	S11	EP	Z	23 25	31.9	241.9	.3		*
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7 NOV	S9	EP	Z	23 25	40.1	121.0	.3	2.9	*
		FS	Y	26	13.9			2.9	

7 NOV	S11	EP	Z	23 32	1.6	282.3	.2	.4	
		FS	Z		6.7			.4	



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
7 NOV	S9	EP	Z	23 32 11.9	80.6	.2	.9		
		ES	Y	24.2			.9		
		E	Y	33 17.4			.9		
8 NOV	S4	EP	Z	0 26 44.6	161.3	.2	.8		
		ES	Y	56.0			.8		
8 NOV	S9	E	Z	0 37 46.2					
8 NOV	S13	E	Y	0 55 30.6					
8 NOV	S13	EP	Z	1 15 33.9			3.9		*
		ES	Y	16 19.8			3.9		
8 NOV	S11	EP	Z	1 15 52.2					*
8 NOV	S9	EP	Z	1 16 7.9	80.6	.2	5.4		*
		ES	Y	17 9.6			5.4		
8 NOV	S9	EP	Z	1 44 51.8	161.3	.1	.4		
		ES	Y	56.1			.4		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
8 NOV	1 50	2.9	44.0N	149.3E	KURILE EXPLOSTION H = 0 KM				
8 NOV	S4	EP	Z	1 50 24.9	999.9		.9	139	2.4
		ES	Y	37.8			.9	139	2.7
		ET	P	58.5			.9	139	
8 NOV	S7	EP	Z	1 50 32.2	241.9	.6	1.4	218	2.2
		ES	X	41.9			1.4	218	-0.4
		ET	P	51 47.5			1.4	218	
8 NOV	S9	EP	Z	1 50 50.0	201.6	.5	2.8	251	-0.1
		ES	Y	51 17.7			2.8	251	15.6
		ET	P	53 36.7			2.8	251	
8 NOV	S11	EP	Z	1 51 1.6			3.6	228	.3
		ET	P	54 34.6			3.6	228	
8 NOV	S10	EP	Z	1 51 4.3			3.8	277	-0.2
		ES	X	44.0			3.8	277	-3.7
		ET	P	54 55.4			3.8	277	
8 NOV	S12	EP	Z	1 51 17.2			4.8	241	-1.3
		ES	X	52 7.7			4.8	241	-11.2
		ET	P	56 2.7			4.8	241	
		E	P	4.4			4.8	241	
8 NOV	S13	ET	P	1 56 13.9			4.8	223	
8 NOV	S9	EP	Z	3 27 58.9	48.1	.2	.6		
		ES	Y	28 7.9			.6		
8 NOV	S11	EP	Z	3 28 3.7					
8 NOV	S13	EP	P	3 46 2.4			2.0		
		ES	Y	26.8			2.0		
8 NOV	S11	EP	Z	4 44 27.8	121.0	.2			
8 NOV	S9	EP	Z	4 44 38.4			.9		
		ES	Y	50.3			.9		
		E	Y	45 45.0			.9		
8 NOV	S9	EP	Z	5 2 54.8	322.6	.2	.4		
		ES	Y	59.3			.4		
8 NOV	S7	EP	Z	5 25 38.5			1.0		
		ES	X	51.6			1.0		
8 NOV	S12	EP	Z	5 50 11.1					
		E	X	14.7					
8 NOV	S11	EP	Z	6 0 35.6	403.2	.1			

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
8 NOV 6 17 13.0 45.4N 151.6E OBS PRELIMINARY EPICENTER -- (5)									
H = 0 KM									
8 NOV	S7	EP	Z	6 17 30.3	201.6	.2	.8	70	-1.1
		ES	X	40.1			.8	70	-1.9
8 NOV	S9	EP	Z	6 17 31.9	282.3	.2	1.1	292	-3.1
		ES	Y	43.8			1.1	292	-5.9
8 NOV	S11	EP	Z	6 17 40.2			1.5	222	-0.5
8 NOV	S4	EP	Z	6 17 49.8	80.6	.2	2.3	71	-3.2
		E	Y	18 20.3			2.3	71	
8 NOV	S10	EP	Z	6 17 58.9			2.8	311	-0.5
		ES	X	18 24.3			2.8	311	14.4
8 NOV	S11	EP	Z	6 19 25.4	524.2	.1			
8 NOV	S4	EP	Z	6 34 38.7			.5		
		ES	Y	44.7			.5		
8 NOV	S11	E	P	6 38 29.4					
8 NOV	S4	EP	Z	6 43 20.9	161.3	.3	.6		
		ES	Y	29.0			.6		
8 NOV 6 53 2.5 44.4N 149.0E KURILE EXPLOSION									
H = 0 KM									
8 NOV	S4	EP	Z	6 53 16.6	1.30	.4	.5	127	.9
		ES	Y	22.8			.5	127	2.8
8 NOV	S7	EP	Z	6 53 30.4	201.6	.2	1.3	236	2.5
		ES	X	42.7			1.3	236	1.5
		ET	P	54 38.9			1.3	236	
8 NOV	S9	EP	Z	6 53 50.8	241.9	.3	2.9	260	-0.1
		ET	P	56 43.3			2.9	260	
8 NOV	S11	EP	Z	6 53 59.9			3.5	235	.5
		ET	P	57 29.9			3.5	235	
8 NOV	S10	EP	X	6 54 11.1			4.1	283	3.3
		ES	Y	52.6			4.1	283	-5.3
9 NOV	S12	EP	Z	6 54 15.0			4.8	247	-2.9
		ET	P	59 4.8			4.8	247	
8 NOV	S10	EP	Z	6 58 13.9	403.2	.1	L		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
8 NOV	S11	EP	Z	7 32 9.6			1.0		
		ES	Z	23.2			1.0		
8 NOV	S9	EP	Z	7 32 11.9	121.0	.2	1.4		
		ES	Y	29.9			1.4		
8 NOV	S7	EP	Z	8 5 6.8			1.9		
		ES	X	29.5			1.9		
8 NOV	S4	EP	Z	8 5 51.0	201.6	.2	.5		
		ES	Y	57.2			.5		

8 NOV 8 10 27.0 44.4N 148.8E OBS PRELIMINARY EPICENTER -- (5)  
H = 0 KM

8 NOV	S4	EP	Z	8 10 34.1	846.8	.2	.4	141	-4.0
		ES	Y	40.7			.4	141	-1.4
8 NOV	S7	EP	Z	8 10 53.8	32.1	.1	1.4	240	-1.3
		ES	X	11 18.4			1.4	240	11.9
8 NOV	S9	EP	Z	8 11 15.8	322.6	.2	3.1	260	-1.6
		E	Z	23.8			3.1	260	
		ES	Y	51.3			3.1	260	15.8
8 NOV	S11	EP	P	8 11 22.7			3.6	236	-2.8
8 NOV	S10	EP	Z	8 11 31.6			4.2	282	-2.7
		ES	X	12 23.6			4.2	282	-3.2

8 NOV	S7	EP	Z	8 44 54.1	48.1	.2	.5		
		ES	X	45 .8			.5		

8 NOV	S12	EP	Z	9 9 24.5	121.0	.2	.3		
		ES	X	28.2			.3		

8 NOV	S13	EP	Z	9 45 19.1			1.3		*
		ES	Y	35.6			1.3		
8 NOV	S12	EP	Z	9 45 31.1	80.6	.2	2.0		*
		ES	X	55.5			2.0		
8 NOV	S11	EP	Z	9 45 32.8					*

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
8 NOV	S11	EP	P	9 51 41.7					
8 NOV	S11	EP	P	10 21 11.9					
8 NOV	S4	EP	Z	10 27 33.3	443.5	.2	1.9		
		ES	Y	56.4			1.9		
8 NOV	S7	EP	Z	10 27 41.5	80.1	.1	4.0		
		ES	X	28 28.6			4.0		
8 NOV	S9	EP	Z	10 28 13.6	201.6	.1			
		E	Y	29 2.9					
		E	Y	26.8					
8 NOV	S11	EP	Z	10 28 17.9					
8 NOV	S10	EP	Z	10 28 29.7			.3		
		ES	X	33.1			.3		
8 NOV	S10	E	X	10 29 34.0					
8 NOV	S13	EP	Z	10 45 16.3	80.6	.2	1.8		
		ES	Y	39.9			1.8		
8 NOV	S4	EP	Z	11 29 56.1	967.7	.3	.5		*
		ES	Y	30 2.0			.5		
8 NOV	S7	EP	Z	11 30 14.0	32.1	.1	1.0		*
		ES	X	36.3			1.8		
8 NOV	S9	EP	Z	11 30 36.2	121.0	.2	3.0		*
		ES	Y	31 11.2			3.0		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
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8 NOV 11 35 57.0 52.4N 173.0E NR IS, ALEUTIAN IS  
H = 41 KM MAG = 4.9

8 NOV	S12	EP	Z	11 38 54.9			13.0	56	-5.8
		ES	X	41 12.0			13.0	56	-14.1
		E	P	52 10.8			13.0	56	
		E	P	53 23.8			13.0	56	
8 NOV	S13	EP	Z	11 39 .9	161.3	.4	13.2	62	-3.1
		ES	Y	41 18.3			13.2	62	-12.1
		E	Y	52 11.0			13.2	62	
8 NOV	S11	EP	Z	11 39 18.4			14.3	58	.3

8 NOV S11 EP Z 11 50 20.2

8 NOV	S7	EP	Z	12 7 22.2	32.1	.1	1.6		*
		ES	X	42.2			1.6		
8 NOV	S11	EP	Z	12 7 34.6			2.5		*
		ES	Z	8 5.0			2.5		
8 NOV	S9	EP	Z	12 7 37.1	121.0	.2	2.5		*
		ES	Y	8 6.6			2.5		

8 NOV S11 EP P 13 12 24.9

8 NOV	S12	EP	Z	13 12 31.6			2.4		
		ES	X	13 .1			2.4		

8 NOV 13 15 22.0 35.2N 139.8E NEAR S CST OF HONSHU, JAPAN  
H = 91 KM MAG = 4.5

8 NOV	S4	EP	Z	13 17 54.4	121.0	.5	11.6	218	-9.0
		E	Y	19 5 .9			11.6	218	
8 NOV	S9	EP	Z	13 18 36.2	161.3	.3	14.0	230	-1.7
		E	Y	21 51.1			14.0	230	



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
8 NOV	S10	EP	Z	13 19 33.6	322.6	.8			
		ES	X	20 52.9			R		
							R		
8 NOV	S12	E	X	13 21 42.7					
8 NOV	S4	EP	Z	13 33 27.2			.5		
		ES	Y	33.5			.5		

8 NOV 13 35 38.0 45.5N 150.0E OBS PRELIMINARY EPICENTER -- (7)  
H = 0 KM

8 NOV	S7	EP	Z	13 35 53.7	999.9		.5	315	1.5
8 NOV	S4	EP	Z	13 36 1.4	362.9	.2	1.3	52	-2.5
		E	Z	2.2			1.3	52	
		E	Y	10.8			1.3	52	
		ES	Y	19.0			1.3	52	2.1
8 NOV	S9	EP	Z	13 36 12.6	241.9	.3	2.2	284	-3.3
		ES	Y	36.8			2.2	284	15.2
		E	Y	37 51.5			2.2	284	
8 NOV	S11	EP	Z	13 36 13.2			2.3	246	-4.7
		E	Z	42.2			2.3	246	
8 NOV	S13	EP	Z	13 36 30.9			3.4	232	-2.7
		E	Y	46.2			3.4	232	
		ES	Y	37 11.1			3.4	232	8.1
8 NOV	S12	EP	Z	13 36 32.0	32.1	.2	3.7	257	-6.2
		E	X	37 1.8			3.7	257	
8 NOV	S10	EP	Z	13 36 33.9	403.2	.2	3.8	301	-4.7
		E	Z	35.2			3.8	301	
		ES	X	37 16.0			3.8	301	-3.5

8 NOV	S4	EP	Z	13 50 21.1			.6		
		ES	Y	29.6			.6		
8 NOV	S7	EP	Z	13 50 27.3	64.1	.1	1.1		
		ES	X	41.9			1.1		
8 NOV	S4	EP	Z	14 46 10.3			1.0		
		ES	Y	23.4			1.0		
8 NOV	S4	EP	Z	16 52 12.0			1.7		
		ES	Y	33.1			1.7		
8 NOV	S11	EP	P	17 31 32.7			1.2		
		ES	Z	47.5			1.2		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
8 NOV	S4	EP	Z	17 53 35.4			3.3		
		ES	Y	54 14.5			3.3		
8 NOV	S12	EP	Z	18 39 20.2	201.6	.2	.6		*
		ES	X	29.2			.6		
8 NOV	S13	EP	Z	18 39 26.3	80.6	.2	1.0		*
		ES	Y	41.8			1.0		
8 NOV	S11	EP	Z	18 39 37.9					*
8 NOV	S11	EP	Z	21 9 3.5	403.2	.1	.4		
		ES	Z	8.4			.4		
8 NOV	S13	EP	Z	21 27 52.5			1.2		
		ES	Y	28 7.4			1.2		
8 NOV	S11	EP	Z	21 28 13.2					
8 NOV	S11	EP	Z	22 43 53.5			.5		
		ES	Z	58.9			.5		
8 NOV	S11	EP	Z	23 5 39.8					
8 NOV	S9	EP	Z	23 44 10.3	201.6	.3	R		
		ES	Y	45 21.1			R		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
9 NOV	0 9	4.0	44.5N	151.2E	KURILE EXPLOSION H = 0 KM				
9 NOV	S7	EP	Z	0 9 25.2	241.9	.2	.8	142	3.0
		E	X	10 4.1			.0	142	
9 NOV	S9	EP	Z	0 9 31.2	725.8	.5	1.4	249	.9
		ES	Y	38.5			1.4	249	-4.7
		ET	P	10 46.5			1.4	249	
9 NOV	S4	EP	Z	0 9 40.8			1.9	94	2.2
		E	Z	53.2			1.9	94	
		E	Y	10 53.4			1.9	94	
9 NOV	S11	EP	Z	0 9 44.9	806.5	.3	2.4	213	.3
		ET	P	11 56.0			2.4	213	
9 NOV	S10	EP	Z	0 9 47.6	241.9	.4	2.6	291	-.2
		E	X	10 17.6			2.6	291	
		ET	P	12 22.9			2.6	291	
9 NOV	S12	EP	Z	0 9 58.3	80.6	.3	3.4	236	-1.4
		ES	X	10 26.2			3.4	236	-3.0
		ET	P	13 17.1			3.4	236	
9 NOV	S13	EP	Z	0 10 3.3	161.3	.5	3.7	211	.3
		E	Y	14.6			3.7	211	
		ET	P	13 40.5			3.7	211	
9 NOV	S11	EP	Z	2 48 9.7					
9 NOV	S9	EP	Z	2 48 25.1	80.6	.2	.9		
		ES	Y	37.5			.9		
		E	Z	49 46.2			.9		
9 NOV	S11	EP	P	2 52 14.5					
9 NOV	S11	EP	Z	3 12 33.8			.4		
		ES	Z	38.7			.4		
9 NOV	S9	EP	Z	4 4 13.4	121.0	.2	.2		
		ES	Y	15.5			.2		
9 NOV	S11	EP	Z	4 5 42.6					
9 NOV	S11	EP	Z	4 22 41.8	403.2	.2	.5		
		ES	Z	47.2			.5		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
9 NOV	S13	EP	Z	4 57 54.7	80.6	.2	2.0		*
		E	Z	58.4			2.0		
		ES	Y	58 19.2			2.0		
9 NOV	S12	EP	Z	4 58 .9			R		*
		ES	X	30.7			R		
		E	P	5 0 5.5			R		
9 NOV	S11	EP	Z	4 58 12.4			3.3		*
		ES	Z	50.6			3.3		
9 NOV	S9	EP	Z	4 58 27.1	121.0	.2			*
		E	Y	50.3					
		E	Y	59 14.2					

9 NOV 6 44 4.1 43.5N 151.9E KURILE EXPLOSION  
H = 0 KM

9 NOV	S9	EP	Z	6 44 31.1	604.8	.4	1.7	208	-4.0
		ES	Y	41.8			1.7	208	-3.1
		ET	P	46 1.4			1.7	208	
9 NOV	S7	EP	Z	6 44 36.3	96.2	.5	1.9	148	-1.7
		ES	X	46 18.2			1.9	148	
9 NOV	S10	EP	Z	6 44 37.7	201.6	.4	2.0	267	-1.1
		ES	X	58.9			2.0	267	12.8
		ET	P	46 31.3			2.0	267	
9 NOV	S4	EP	Z	6 44 44.1			2.7	114	-5.8
		ES	Y	45 20.7			2.7	114	21.3
9 NOV	S11	EP	Z	6 44 50.3	161.3	.2	3.1	195	-4.9
		E	Z	46 22.8			3.1	195	
		E	Z	47 17.5			3.1	195	
		ET	P	36.9			3.1	195	
9 NOV	S12	EP	Z	6 44 59.1	161.3	.2	3.8	219	-5.6
		ES	X	45 38.6			3.8	219	-7.0
		ET	P	48 34.5			3.8	219	
9 NOV	S13	EP	Z	6 45 12.0	48.1	.2	4.4	199	-1.4
		ES	Y	46 15.5			4.4	199	7.4
		ET	P	49 22.4			4.4	199	

9 NOV	S12	EP	Z	6 46 28.2	564.5	.2	5.1		
		ES	X	47 27.3			5.1		
9 NOV	S4	EP	Z	6 46 45.1	121.0	.2	1.3		
		ES	Y	47 1.5			1.3		
9 NOV	S13	E	Y	6 47 3.5					

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
9 NOV	S9	EP	Z	6 47 41.8	4.4U	.3	3.0		
		ES	Y	48 17.6			3.0		
9 NOV	S11	EP	Z	7 25 37.5	80.1	.2	1.9		
		ES	Z	26 1.1			1.9		
9 NOV	S11	EP	Z	7 28 54.4			.3		
		ES	Z	58.2			.3		
9 NOV	S7	EP	Z	8 15 6.2			.5		
		ES	X	12.8			.5		
9 NOV	S9	EP	Z	8 52 48.6	161.3	.2	.3		
		ES	Y	52.5			.3		
9 NOV 9 24 16.0 46.4N 153.0E OBS PRELIMINARY EPICENTER -- (5) H = 65 KM									
9 NOV	S11	EP	Z	9 24 23.7	1.5U	.2	.1	180	-1.9
		E	Z	29.0			.1	180	
9 NOV	S13	EP	Z	9 24 39.4			1.4	205	-0.8
		ES	Y	54.8			1.4	205	-3.0
9 NOV	S9	EP	Z	9 24 40.0	121.0	.2	1.4		-0.3
		ES	Y	54.1			1.4		-3.8
		E	Z	25 51.4			1.4		
9 NOV	S12	EP	Z	9 24 40.4	80.6	.4	1.5	268	-1.5
		ES	X	59.0			1.5	268	-1.6
9 NOV	S7	EP	Z	9 24 50.2	32.1	.1	2.2	53	-0.3
		ES	X	25 18.4			2.2	53	2.2
9 NOV	S10	E	Z	9 25 34.5	241.9	.2	3.0	338	
		ES	X	37.8			3.0	338	.7
9 NOV	S4	EP	Z	9 25 8.4			3.6	60	-2.5
		ES	Y	47.1			3.6	60	-5.6
9 NOV	S13	EP	Z	10 0 47.9			1.0		
		ES	Y	1 1.0			1.0		
9 NOV	S11	EP	Z	10 1 9.4	241.9	.3			
9 NOV	S4	EP	Z	10 21 40.9	121.0	.3	.9		
		ES	Y	52.4			.9		
9 NOV	S11	EP	P	10 38 37.7					

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
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9 NOV 10 49 43.0 46.3N 153.1E OBS PRELIMINARY EPICENTER -- (7)  
H = 0 KM

9 NOV	S11	-IP	Z	10 49 51.5	999.9		.2	161	.0
9 NOV	S9	EP	Z	10 50 2.5	645.2	.2	1.3	3	-5.8
		ES	Y	14.1			1.3	3	-7.5
		E	P	51 9.6			1.3	3	
9 NOV	S13	EP	Z	10 50 11.2			1.5	200	.7
		ES	Y	33.9			1.5	200	11.4
		E	Y	52 23.0			1.5	200	
9 NOV	S12	EP	Z	10 50 6.6	201.6	.1	1.5	264	-3.9
		ES	X	22.7			1.5	264	.1
		E	P	51 19.4			1.5	264	
9 NOV	S7	EP	Z	10 50 19.3	32.1	.1	2.2	56	-1.3
		E	X	56.4			2.2	56	
		E	X	52 11.2			2.2	56	
9 NOV	S10	EP	Z	10 50 34.6			2.9	339	3.8
		ES	Y	52.8			2.9	339	9.0
		E	Y	52 58.1			2.9	339	
9 NOV	S4	EP	Z	10 50 38.5	80.6	.2	3.6	62	-3.1
		FS	Y	51 19.3			3.6	62	1.5

9 NOV	S11	EP	Z	10 51 56.6	999.9				*
9 NOV	S9	EP	Z	10 52 19.1	846.8	.3	4.8		*
		ES	Y	53 14.7			4.8		
9 NOV	S4	EP	Z	10 52 43.6			3.5		*
		ES	Y	53 24.5			3.5		

9 NOV	S11	EP	Z	11 7 37.1			.5		
		ES	Z	43.3			.5		
9 NOV	S11	EP	Z	11 8 49.8					
9 NOV	S11	EP	P	11 12 51.6					
9 NOV	S11	+IP	Z	11 19 4.1	846.8	.2			
9 NOV	S13	EP	Z	11 19 19.2			1.2		
		ES	Y	34.0			1.2		
9 NOV	S11	EP	Z	11 39 16.6	725.8	.2			
9 NOV	S9	EP	Z	11 39 27.6			.9		
		ES	Y	39.5			.9		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
9 NOV	S11	EP	Z	11 41 58.4	483.9	.3			
9 NOV	S11	EP	Z	11 45 31.1			1.8		
		ES	Z	53.1			1.8		
9 NOV	S13	EP	Z	12 29 43.6			.7		
		ES	Y	52.9			.7		
9 NOV	S11	EP	P	12 29 59.0					
9 NOV	S11	EP	Z	12 46 36.0			.5		
		ES	Z	43.9			.5		
9 NOV	S11	EP	P	12 57 6.8					

9 NOV 13 3 3.0 44.3N 150.3E OBS PRELIMINARY EPICENTER -- (4)  
H = 40 KM

9 NOV	S7	EP	Z	13 3 18.2	80.6	.1	.8	191	-.5
		ES	X	32.0			.8	191	2.8
9 NOV	S4	EP	Z	13 3 25.7	80.6	.2	1.4	106	-.2
		ES	Y	43.0			1.4	106	.3
9 NOV	S9	EP	Z	13 3 35.0			2.1	251	-.8
		ES	Y	57.1			2.1	251	-3.1
9 NOV	S11	EP	Z	13 3 46.4	64.1	.2	2.9	222	-1.6
		E	Z	4 17.7			2.9	222	
9 NOV	S4	EP	Z	13 7 50.7	282.3	.2	.5		
		ES	Y	56.9			.5		
9 NOV	S11	EP	P	13 11 4.7			.5		
		ES	Z	10.1			.5		
9 NOV	S11	EP	P	13 12 48.2			.5		
		ES	Z	54.3			.5		
9 NOV	S11	EP	P	13 20 53.0			.4		
		ES	Z	57.9			.4		
9 NOV	S11	-1P	Z	13 55 58.7	2.0U	.2	.4		
		ES	Z	56 2.8			.4		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
9 NOV	S9	EP	Z	13 56	9.5	846.8	.2		
		E	Y		21.0				
		E	Z	57	16.9				
9 NOV	S12	EP	Z	14 2	13.6	121.0	.3	1.2	
		E	Z		20.9			1.2	
		ES	X		28.6			1.2	
9 NOV	S11	+IP	Z	14 15	1.2	403.2	.2	.5	
		ES	Z		7.0			.5	
9 NOV	S7	EP	Z	14 15	6.3			.5	
		ES	X		12.2			.5	
9 NOV	S13	EP	Z	14 24	53.6			3.1	*
		ES	Y		25 29.7			3.1	
9 NOV	S11	EP	Z	14 25	12.3	161.3	.2	4.1	*
		ES	Z		26 .0			4.1	
9 NOV	S9	EP	Z	14 25	26.9	161.3	.2	5.3	*
		ES	Y		26 27.0			5.3	
9 NOV	S7	EP	Z	14 25	45.2	241.9	.1	.5	*
		ES	X		51.6			.5	
9 NOV	S11	EP	Z	14 59	7.7			.5	
		ES	Z		15.7			.5	
9 NOV	S4	EP	Z	15 10	42.6			1.4	
		ES	Y		11 .3			1.4	
9 NOV	S7	EP	Z	16 7	43.6			1.1	
		ES	X		57.9			1.1	
9 NOV	S4	EP	Z	16 7	52.0			1.6	
		ES	Y		8 12.1			1.6	
9 NOV	S13	EP	P	16 11	37.2			2.0	
		ES	Y		12 1.2			2.0	
9 NOV	S11	EP	P	16 18	50.6			.4	
		ES	Z		55.1			.4	
9 NOV	S7	EP	Z	16 58	40.3			.9	
		ES	X		52.4			.9	

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
9 NOV	S11	EP	Z	17 34 59.2			.5		
		ES	Z	35 6.1			.5		
9 NOV	S9	EP	Z	17 35 12.9	80.6	.2	1.8		
		ES	Y	35.4			1.8		
9 NOV	S13	EP	Z	18 25 18.6			R		
		ES	Y	27 14.2			R		
9 NOV	S11	EP	Z	18 25 16.9	121.0	.2			
9 NOV 18 47 55.0 44.5N 149.8E OBS PRELIMINARY EPICENTER -- (4)									
H = 30 KM									
9 NOV	S7	EP	Z	18 48 9.7	32.1	.1	.8	219	-.5
		ES	X	22.5			.8	219	2.6
9 NOV	S4	EP	Z	18 48 11.5	241.9	.3	1.0	101	-.8
		ES	Y	23.1			1.0	101	-1.6
9 NOV	S9	EP	Z	18 48 31.6	241.9	.2	2.3	259	-.5
		ES	Y	57.0			2.3	259	-.7
9 NOV	S11	EP	Z	18 48 40.6	80.6	.1	3.0	230	-1.1
9 NOV	S11	EP	Z	19 28 8.4	121.0	.3	.5		
		ES	Z	14.9			.5		
9 NOV	S7	EP	Z	19 32 50.8	32.1	.1	.7		
		ES	X	33 .0			.7		
9 NOV	S4	EP	Z	19 39 31.0	80.6	.1	1.2		
		ES	Y	45.8			1.2		
9 NOV	S11	EP	Z	20 47 53.2	32.1	.2	1.0		
		ES	Z	48 6.8			1.0		
9 NOV	S4	EP	Z	21 33 43.7			.5		
		ES	Y	50.7			.5		
9 NOV	S4	EP	Z	21 42 39.3			1.4		
		E	Z	40.7			1.4		
		ES	Y	57.1			1.4		
9 NOV	S7	EP	Z	21 42 41.2			1.2		
		ES	X	56.6			1.2		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
9 NOV	S11	EP	Z	17 34 59.2			.5		
		ES	Z	35 6.1			.5		
9 NOV	S9	EP	Z	17 35 12.9	80.6	.2	1.8		
		ES	Y	35.4			1.8		
9 NOV	S13	EP	Z	18 25 18.6			R		
		ES	Y	27 14.2			R		
9 NOV	S11	EP	Z	18 25 36.9	121.0	.2			

9 NOV 18 47 55.0 44.5N 149.8E OBS PRELIMINARY EPICENTER -- (4)  
H = 30 KM

9 NOV	S7	EP	Z	18 48 9.7	32.1	.1	.8	219	-.5
		ES	X	22.5			.8	219	2.6
9 NOV	S4	EP	Z	18 48 11.5	241.9	.3	1.0	101	-.8
		ES	Y	23.1			1.0	101	-1.6
9 NOV	S9	EP	Z	18 48 31.6	241.9	.2	2.3	259	-.5
		ES	Y	57.0			2.3	259	-.7
9 NOV	S11	EP	Z	18 48 40.6	80.6	.1	3.0	230	-1.1

9 NOV	S11	EP	Z	19 28 8.4	121.0	.3	.5		
		ES	Z	14.9			.5		

9 NOV	S7	EP	Z	19 32 50.8	32.1	.1	.7		
		ES	X	33 .0			.7		

9 NOV	S4	EP	Z	19 39 31.0	80.6	.1	1.2		
		ES	Y	45.8			1.2		

9 NOV	S11	EP	Z	20 47 53.2	32.1	.2	1.0		
		ES	Z	48 6.8			1.0		

9 NOV	S4	EP	Z	21 33 43.7			.5		
		ES	Y	50.7			.5		

9 NOV	S4	EP	Z	21 42 39.3			1.4		
		E	Z	40.7			1.4		
		ES	Y	57.1			1.4		

9 NOV	S7	EP	Z	21 42 41.2			1.2		
		ES	X	56.6			1.2		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
10 NOV	S11	EP	Z	0 57 7.1	201.6	.2	1.7		*
		ES	Z	27.7			1.7		
10 NOV	S7	EP	Z	0 57 9.2			2.6		*
		ES	X	40.1			2.6		
10 NOV	S9	EP	Z	0 57 16.7	604.8	.2	2.2		*
		ES	Y	43.5			2.2		
10 NOV	S10	EP	Z	0 59 24.3			.2		
		E	Z	25.5			.2		
		ES	Y	26.6			.2		
10 NOV	S13	EP	Z	1 2 17.8	80.6	.3	3.2		
		ES	Y	55.5			3.2		
10 NOV	S11	EP	P	1 2 35.5			4.9		
		ES	Z	3 31.5			4.9		
10 NOV	S11	EP	Z	1 47 28.6	121.0	.2	.5		
		ES	Z	35.8			.5		
10 NOV	S7	EP	Z	2 24 58.5			5.5		
		ES	Z	26 1.6			5.5		
10 NOV	3	2	32.5	31.9S	68.4W	SAN JUAN PROVINCE, ARGENTINA			
						H = 113 KM	MAG = 6.0		
10 NOV	S13	EPKP1	Z	3 21 54.4	604.8	.8	144.4	79	-1.1
10 NOV	S10	EPKP1	Z	3 21 53.9	282.3	.7	144.4	85	-1.6
		EPKP2	Z	22 1.1			144.4	85	4.9
10 NOV	S11	EPKP1	Z	3 21 56.6	846.8	.6	145.2	80	-.2
10 NOV	S9	EPKP1	Z	3 21 57.2	443.5	.6	145.4	82	
10 NOV	S7	EPKP2	Z	3 22 3.2			147.1	80	-3.2
10 NOV	S4	EPKP1	Z	3 22 5.6			148.6	79	3.2
		EPKP2	Z	11.0			148.6	79	-1.4
10 NOV	S9	EP	Z	3 17 42.2	32.1	.2	.6		
		ES	Y	51.2			.6		
10 NOV	S10	EP	Z	3 18 15.0	80.6	.1	.2		
		ES	Y	16.7			.2		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
9 NOV	S4	EP	Z	22 22 .5	322.6	.2	.5		
		ES	Y	8.0			.5		
9 NOV	S9	EP	Z	22 53 52.4	201.6	.2	2.4		
		ES	Y	54 21.1			2.4		
9 NOV	S13	EP	Z	22 57 50.1	161.3	.3	1.0		
		ES	Y	58 2.7			1.0		
9 NOV	S9	EP	Z	22 58 5.3	161.3	.2	2.8		
		ES	Y	38.4			2.8		
9 NOV	S13	EP	Z	23 21 43.8	80.6	.2	.5		
		ES	Y	49.2			.5		

9 NOV 23 23 3.0 45.6N 152.1E KURILE EXPLOSION  
H = 0 KM

9 NOV	S9	EP	Z	23 23 22.2	1.0U	.5	.9	314	-0.1
		ES	Y	35.9			.9	314	1.6
		ET	P	24 10.3			.9	314	
9 NOV	S11	EP	Z	23 23 23.7	1.0U	.5	1.1	215	-1.7
		ET	P	24 20.7			1.1	215	
9 NOV	S7	EP	Z	23 23 28.3	685.5	.5	1.2	67	1.3
		E	X	24 37.4			1.2	67	
9 NOV	S13	EP	Z	23 23 41.9	201.6	.4	2.4	211	-2.0
		ES	Y	51.1			2.4	211	2.5
		ET	P	26 3.1			2.4	211	
9 NOV	S10	E	Z	23 24 .1	241.9	.4	2.6	319	
		ES	X	15.1			2.6	319	19.9
		ET	P	26 30.9			2.6	319	
9 NOV	S4	EP	Z	23 23 49.1	121.0	.5	2.7	69	.5
		ES	Y	24 1.5			2.7	69	3.6
		ET	P	26 30.6			2.7	69	
		E	P	45.2			2.7	69	

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
10 NOV	S11	EP	Z	3 25 57.9			2.0		
		ES	Z	26 22.5			2.0		
10 NOV	S11	EP	Z	3 29 25.2			.2		
		ES	Z	27.2			.2		
10 NOV	S11	EP	P	3 36 3.3			.5		
		ES	Z	8.7			.5		
10 NOV	S11	EP	Z	3 43 11.3			.5		
		ES	Z	17.5			.5		
10 NOV	S7	E	X	4 33 50.6					
10 NOV	S7	EP	Z	4 59 44.7			1.2		
		ES	X	5 0 .3			1.2		
10 NOV	S4	EP	Z	5 5 9.3	443.5	.3	.9		
		ES	Y	21.5			.9		
10 NOV	S9	EP	Z	5 5 51.5	161.3	.2	3.6		
		ES	Y	6 34.1			3.6		
10 NOV	S11	EP	P	5 5 59.9			.9		
		ES	Z	6 11.8			.9		
10 NOV	S7	EP	Z	5 6 30.4			2.9		
		ES	X	7 4.4			2.9		
10 NOV	S11	EP	Z	5 30 42.5			R		
		ES	Z	31 58.3			R		
10 NOV	S13	E	P	5 33 30.2					
10 NOV	S11	EP	P	6 19 28.9			1.8		
		ES	Z	51.4			1.8		
10 NOV	S9	EP	Z	6 20 5.7	322.6	.3			

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
10 NOV	6 25	4.0	46.3N	153.0E	KURILE EXPLOSION H = 0 KM				
10 NOV	S11	+IP	Z	6 25 7.5	999.9		.2	180	-4.8
10 NOV	S9	EP	Z	6 25 28.7	362.9	.2	1.3		-0.6
		ES	Y	40.8			1.3		-1.8
		ET	P	26 49.0			1.3		
10 NOV	S13	EP	Z	6 25 26.7	201.6	.3	1.5	203	-5.2
		ES	Y	51.3			1.5	203	7.5
		ET	P	26 47.5			1.5	203	
10 NOV	S7	EP	Z	6 25 38.7			2.1	55	-2.0
10 NOV	S10	E	Z	6 26 1.1			2.9	338	
		ES	X	25.4			2.9	338	19.6
		ET	P	28 54.1			2.9	338	
10 NOV	S4	EP	Z	6 31 14.3	32.1	.2	.5		
		ES	Y	21.1			.5		
10 NOV	S4	EP	Z	6 36 5.2	80.6	.2	2.1		
		ES	Y	30.1			2.1		
10 NOV	S13	EP	Z	7 20 28.0			.7		
		ES	Y	37.2			.7		
10 NOV	S11	EP	P	7 20 46.6					
10 NOV	S11	EP	Z	9 0 40.5					
10 NOV	S9	EP	Z	9 38 32.3	443.5	.2	.7		*
		ES	Y	41.8			.7		
		E	Y	39 21.6			.7		
10 NOV	S7	EP	Z	9 38 39.9			1.9		*
		ES	X	39 3.7			1.9		
10 NOV	S4	EP	Z	9 39 2.5			2.8		*
		ES	Y	37.1			2.8		
10 NOV	S9	EP	Z	10 29 8.4	241.9	.2			
		E	Y	19.4					
		E	Y	30 15.2					



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
10 NOV	S11	EP	Z	10 48 56.5	80.6	.1	.4		
		ES	Z	49 1.1			.4		
10 NOV	S7	-IP	Z	11 25 9.5	161.3	.1	.9		*
		ES	X	21.7			.9		
10 NOV	S4	EP	Z	11 25 10.2	121.0	.2	.8		*
		ES	Y	21.0			.8		
10 NOV	S11	EP	P	11 25 37.6			2.7		*
		ES	Z	26 9.9			2.7		
10 NOV	S9	E	Y	11 29 59.0					
10 NOV	S7	EP	Z	11 34 37.7	48.1	.1	1.0		
		ES	X	50.3			1.0		
10 NOV	S7	EP	Z	12 54 18.8	32.1	.1	.5		
		ES	X	25.1			.5		
10 NOV	S11	EP	Z	13 22 31.5			.5		
		ES	Z	38.3			.5		
10 NOV	S11	EP	P	13 29 14.2			.4		
		ES	Z	18.6			.4		
10 NOV	S7	EP	Z	13 33 40.5	32.1	.1	.5		
		ES	X	47.2			.5		
10 NOV	S9	EP	Z	14 0 37.6			.7		
		ES	Y	47.3			.7		
10 NOV	S11	EP	Z	15 49 23.9			.5		
		ES	Z	30.1			.5		
10 NOV	S11	EP	Z	16 6 37.2	403.2	.2	.5		
		ES	Z	42.9			.5		
10 NOV	S9	EP	Z	16 26 59.8	80.6	.1	.7		
		ES	Y	27 9.3			.7		
10 NOV	S11	EP	P	16 27 8.7					
10 NOV	S7	+IP	Z	16 37 42.5	241.9	.1	.5		
		ES	X	48.9			.5		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
10 NOV	S11	EP	P	18 15 7.0					
10 NOV 19 12 54.0 46.2N 153.6E OBS PRELIMINARY EPICENTER -- (5) H = 0 KM									
10 NOV	S11	-IP	Z	19 13 3.8	999.9		.5	126	-4.3
10 NOV	S9	EP	Z	19 13 17.0	483.9	.2	1.3	19	-1.9
		ES	Y	30.0			1.3	19	-2.4
		E	P	14 26.4			1.3	19	
10 NOV	S13	EP	Z	19 13 21.2			1.5	186	-0.6
		ES	Y	41.3			1.5	186	7.7
10 NOV	S7	EP	Z	19 13 34.9			2.4	63	-0.3
		E	Z	43.7			2.4	63	
10 NOV	S4	EP	Z	19 13 53.7			3.9	65	-2.8
		ES	Y	14 36.8			3.9	65	-5.0
10 NOV	S13	EP	Z	19 32 3.8			5.8		
		ES	Y	33 10.8			5.8		
10 NOV	S11	EP	Z	21 35 9.9	64.1	.1	.4		
		ES	Z	13.9			.4		
10 NOV	S7	EP	Z	21 54 21.2			1.5		
		ES	X	39.8			1.5		
		E	Z	55 40.9			1.5		
10 NOV	S11	EP	P	21 54 39.7					
10 NOV	S10	EP	Z	21 54 58.9	201.6	.2	.3		
		ES	X	55 2.7			.3		
10 NOV	S13	EP	Z	21 55 57.3			1.6		
		ES	Y	56 16.8			1.6		
10 NOV	S7	EP	Z	23 10 30.9			.5		
		ES	Y	37.3			.5		
10 NOV	S11	EP	Z	23 52 19.8	48.1	.1	.4		
		ES	Z	24.2			.4		
11 NOV	S4	EP	Z	0 43 8.7			.5		
		ES	Y	15.5			.5		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
11NOV	S7	EP	Z	0 43 25.0			1.6		
		ES	X	45.3			1.6		
11NOV	1 34 37.0	51.4N	176.2E	RAT IS, ALEUTIAN IS H = 33 KM MAG = 4.6					
11NOV	S9	EP	Z	1 38 26.6	80.6	.3	16.7	59	-3.3
		E	Y	41 3.2			16.7	59	
11NOV	S13	E	Z	1 40 32.7	121.0	.5			
11NOV	S13	EP	Z	2 7 42.9	999.9				*
11NOV	S11	EP	P	2 7 56.5			2.2		*
		ES	Z	8 23.1			2.2		
11NOV	S9	EP	Z	2 8 13.9	48.1	.2	2.2		*
		E	Z	17.2			2.2		
		ES	Y	40.1			2.2		
11NOV	S4	EP	Z	2 8 51.2			4.5		*
		ES	Y	9 43.5			4.5		
11NOV	S10	EP	Z	2 9 9.8	161.3	.1	.1		*
		ES	X	11.0			.1		
11NOV	S11	EP	P	2 42 18.0			.4		
		ES	Z	23.0			.4		
11NOV	S4	EP	Z	3 32 48.3	201.6	.2	.5		
		ES	Y	54.7			.5		
11NOV	S10	E	Z	3 34 28.3					
11NOV	S11	EP	P	3 43 42.4					
11NOV	S4	EP	Z	3 57 52.6			1.3		
		ES	Y	56 9.5			1.3		
11NOV	S11	EP	P	4 45 3.2			.5		
		ES	Z	9.7			.5		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
11 NOV	S4	EP	Z	5 16 35.3			1.8		
		ES	Y	57.7			1.8		
11 NOV	S11	EP	P	6 17 44.8			.5		
		ES	Z	51.5			.5		
11 NOV	S7	EP	Z	6 35 31.2			.5		
		ES	X	38.9			.5		
11 NOV	S11	EP	P	6 53 17.0			.5		
		ES	Z	22.6			.5		
11 NOV	S11	EP	P	7 15 13.2					
11 NOV	S11	EP	Z	7 28 35.2	403.2	.1	.4		
		ES	Z	39.9			.4		
11 NOV	S7	EP	Z	7 35 52.3			.6		
		ES	X	36 1.1			.6		
11 NOV	S4	EP	Z	10 38 53.4			R		*
		ES	Y	40 35.4			R		
11 NOV	S7	EP	Z	10 39 10.6	32.1	.1	5.2		*
		E	X	16.5			5.2		
		ES	X	40 10.6			5.2		
11 NOV	S9	E	Z	10 39 27.2					*
		E	Y	41 40.3					
11 NOV	S11	EP	P	10 39 32.6			R		*
		ES	Z	41 47.1			R		
11 NOV	S10	EP	Z	10 42 11.9	201.6	.2	.2		
		ES	X	14.4			.2		
11 NOV	S7	-IP	Z	11 54 21.5	64.1	.1	.5		
		ES	X	26.9			.5		
11 NOV	S11	EP	P	13 16 29.8			.4		
		ES	Z	34.6			.4		
11 NOV	S7	EP	Z	13 46 40.1			.5		
		ES	X	45.5			.5		
11 NOV	S13	EP	P	14 26 27.1			2.5		
		ES	Y	57.0			2.5		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
11NOV	S11	EP	Z	14 26 49.9	201.6	.3			
11NOV	S4	EP	Z	14 49 12.4	362.9	.1	.5		
		ES	Y	18.4			.5		
11NOV	S11	EP	Z	15 4 36.2	362.9	.2	1.3		
		ES	Z	53.1			1.3		
11NOV	S10	EP	Z	15 5 52.2	282.3	.3	.3		
		ES	X	55.1			.3		
11NOV	S11	EP	Z	15 27 13.8			.5		
		ES	Z	19.8			.5		
11NOV	S4	EP	Z	15 27 54.6			2.2		
		ES	Y	28 20.7			2.2		
11NOV	S4	EP	Z	15 37 12.3			2.3		
		ES	Y	40.4			2.3		
11NOV	S10	EP	Z	15 39 13.0	201.6	.3	.5		
		ES	X	20.8			.5		

11NOV 16 3 38.0 50.3N 155.5E KURILE IS  
H = 145 KM MAG = 4.9

11NOV	S13	-IP	Z	16 4 19.9	999.9		2.9	22	-4.1
		ES	Y	52.6			2.9	22	-6.5
11NOV	S11	+IP	Z	16 4 36.4	685.5	.3	4.2	23	-4.6
		E	P	5 20.3			4.2	23	
11NOV	S9	-IP	Z	16 4 53.0	999.9		5.6	17	-6.8
		E	P	5 48.9			5.6	17	
11NOV	S7	EP	Z	16 5 4.0	64.1	.1	6.2	31	-3.8
		E	X	15.7			6.2	31	
		ES	X	6 9.5			6.2	31	-7.2
11NOV	S10	EP	Z	16 5 8.9	999.9		6.7	5	-6.1
		E	Z	6 18.0			6.7	5	
11NOV	S4	EP	Z	16 5 19.5	241.9	.2	7.4	38	-4.3
		ES	Y	6 38.3			7.4	38	-7.9

11NOV	S4	EP	Z	16 51 4.8	121.0	.2	.8		
		ES	Y	15.8			.8		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
11 NOV	S7	EP	Z	16 51 23.7			1.5		
		ES	X	42.7			1.5		
11 NOV	S4	EP	Z	17 25 56.2			L		
		ES	Y	29 3.4			L		
11 NOV	S13	EP	Z	17 51 43.4	121.0	.2	3.3		*
		ES	Y	52 22.6			3.3		
11 NOV	S11	EP	P	17 52 .6			4.6		*
		ES	Z	54.4			4.6		
11 NOV	S9	EP	Z	17 52 16.5	161.3	.2	5.3		*
		ES	Y	53 17.3			5.3		
11 NOV	S10	EP	Z	17 52 26.0			N		*
		ES	Y	53 43.7			N		
11 NOV	S7	E	Z	17 52 26.7					*
11 NOV	S11	+IP	Z	17 59 48.5	1.9U	.2	.4		
		ES	Z	52.6			.4		
11 NOV	S7	IP	Z	18 20 .9	443.5	.1	1.1		
		ES	X	15.1			1.1		
11 NOV	S4	EP	Z	18 52 47.9			.3		
		ES	Y	51.6			.3		
11 NOV	S7	EP	Z	19 38 56.0			.7		*
		ES	X	39 5.5			.7		
		E	P	56.2			.7		
11 NOV	S11	EP	P	19 39 14.5			2.2		*
		ES	Z	41.1			2.2		
11 NOV	S10	EP	Z	19 39 41.6	161.3	.2	.2		*
		ES	Y	43.0			.2		
11 NOV	S7	E	X	21 0 48.8					
11 NOV	S11	EP	P	21 8 30.1					

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
11 NOV	S4	EP	Z	21 22 35.5			.6		
		ES	Y	43.7			.6		
11 NOV	S11	+IP	Z	23 24 15.1	322.6	.1	.7		
		ES	Z	24.8			.7		
11 NOV	S13	EP	Z	23 58 53.3			3.0		
		ES	Y	59 28.3			3.0		
11 NOV	S11	EP	P	23 58 59.9			5.0		
		ES	Z	59 57.7			5.0		
12 NOV	S7	EP	Z	4 33 47.5	32.1	.1	2.5		
		ES	X	34 17.2			2.5		
12 NOV	S4	EP	Z	5 22 6.8	80.6	.2	1.4		
		ES	Y	24.7			1.4		
12 NOV	S7	EP	Z	5 22 18.0	32.1	.1	2.3		*
		ES	X	45.5			2.3		
		E	X	23 18.7			2.3		
12 NOV	S9	EP	Z	5 22 38.3	362.9	.2			*
		E	Z	46.9					
		E	Y	23 18.3					
		E	Y	55.8					
12 NOV	S11	EP	P	5 22 40.6			3.7		*
		ES	Z	23 24.0			3.7		
12 NOV	S4	EP	Z	5 23 5.9	121.0	.2	.8		*
		ES	Y	16.6			.8		
12 NOV	S10	EP	Z	5 23 48.0	80.6	.1	.5		
		ES	X	53.3			.5		
12 NOV	S10	F	X	5 24 33.4					
12 NOV	S11	+IP	Z	5 43 45.5			.5		
		ES	Z	51.8			.5		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
12 NOV	5 55	3.9	46.1N	153.5E	KURILE EXPLOSION H = 0 KM				
12 NOV	S11	+IP	Z	5 55 15.7			.5	139	-2.6
		ET	P	34.9			.5	139	
12 NOV	S9	EP	Z	5 55 26.7	524.2	.4	1.2	18	-0.4
		E	Z	31.6			1.2	18	
		ES	Y	37.6			1.2	18	-3.8
		ET	P	56 29.3			1.2	18	
12 NOV	S13	EP	Z	5 55 35.8			1.6	188	2.5
		ES	Y	47.8			1.6	188	3.6
		ET	P	57 3.1			1.6	188	
12 NOV	S7	EP	Z	5 55 49.0	121.0	.3	2.3	64	5.4
		ES	X	57.3			2.3	64	8.7
		ET	P	58 .8			2.3	64	
12 NOV	S10	E	Z	5 56 21.7			2.6	343	
		E	X	26.4			2.6	343	
		ET	P	58 22.2			2.6	343	
12 NOV	S7	E	X	6 11 6.0					
12 NOV	S11	-IP	Z	6 38 3.3	403.2	.2	.4		
		ES	Z	7.8			.4		
12 NOV	S4	EP	Z	6 44 53.2			.7		
		ES	Y	45 2.7			.7		
12 NOV	S11	EP	Z	6 55 45.9			.4		
		ES	Z	51.0			.4		
12 NOV	S11	EP	Z	7 0 22.2			.5		
		ES	Z	29.1			.5		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
12 NOV	7 48	6.0	46.4N	152.6E	OBS PRELIMINARY EPICENTER -- (5) H = 0 KM				
12 NOV	S11	+IP	Z	7 48 14.2	927.4	.2	.3	250	-1.5
		E	Z	18.9					
12 NOV	S9	EP	Z	7 48 30.1	121.0	.2	.3	250	
		E	Z	33.2			1.4	349	-3.0
		ES	Y	45.2			1.4	349	
		E	Z	49 42.2			1.4	349	-0.2
12 NOV	S13	EP	Z	7 48 30.5			1.5	214	-4.0
		ES	Y	44.3			1.5	214	-1.7
12 NOV	S7	EP	Z	7 48 41.4			1.9	48	1.0
		E	X	49 10.1			1.9	48	
12 NOV	S4	EP	Z	7 48 59.4			3.4	58	-1.4
		ES	Y	49 38.3			3.4	58	9.9
12 NOV	S10	E	Z	7 49 25.0					
12 NOV	S9	EP	Z	8 33 33.5	121.0	.3	.8		
		ES	Y	44.3			.8		
12 NOV	S13	EP	Z	9 45 54.5	282.3	.2	1.3		*
		ES	Y	46 11.0			1.3		
12 NOV	S11	EP	Z	9 46 5.2			2.0		*
		ES	Z	29.3			2.0		
12 NOV	S9	EP	Z	9 46 21.9	201.6	.2	3.0		*
		ES	Y	56.8			3.0		
12 NOV	S7	EP	Z	9 46 28.6	32.1	.1	3.8		*
		ES	X	47 12.4			3.8		
12 NOV	S7	EP	Z	10 1 39.7	32.1	.1	.5		
		ES	X	45.0			.5		
12 NOV	S7	EP	Z	11 17 56.5			1.5		
		ES	X	18 14.9			1.5		
		E	X	19 28.0			1.5		
12 NOV	S11	EP	P	11 20 55.4					

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
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12 NOV 11 50 31.6 23.8S 67.6W CHILE-ARGENTINA BORDER REG  
H = 126 KM MAG = 5.6

12 NOV	S4	EPKP1	Z	12 9 50.3			144.0	67	-2.0
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12 NOV 12 49 43.6 41.8N 144.1E HOKKAIDO, JAPAN REGION  
H = 33 KM MAG = 5.8

12 NOV	S4	EP	Z	12 50 44.6	241.9	.2	4.3	230	-3.8
		E	Z	45.6	999	9	4.3	230	
12 NOV	S7	EP	Z	12 51 4.7	1.8U	.1	5.7	237	-3.8
		E	Z	52 10.1			5.7	237	
12 NOV	S9	EP	Z	12 51 23.2	645.2	.2	7.2	247	-6.3
		E	Z	52 37.2			7.2	247	
		E	Y	55 22.8			7.2	247	
12 NOV	S11	EP	Z	12 51 32.9	999.9		7.9	237	-6.5
12 NOV	S10	EP	Z	12 51 32.8	564.5	.4	7.9	260	-6.5
		ES	X	52 54.7			7.9	260	-14.2
12 NOV	S13	EP	Z	12 51 49.5	806.5	.0	9.1	233	-5.7
		ES	Y	53 24.1			9.1	233	-13.2

12 NOV	S11	EP	Z	13 15 51.8					
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12 NOV 13 28 23.0 41.6N 143.8E HOKKAIDO, JAPAN REGION  
H = 54 KM MAG = 4.1

12 NOV	S4	EP	Z	13 29 23.8	564.5	.3	4.6	230	-8.1
		E	Y	52.1			4.6	230	
		E	Y	30 9.5			4.6	230	
12 NOV	S7	EP	Z	13 29 44.0	161.3	.1	6.0	237	-7.8
		ES	X	30 46.7			6.0	237	-13.8
12 NOV	S9	EP	Z	13 30 2.5	403.2	.2	7.5	246	-10.0
		E	Z	10.6			7.5	246	
		E	Y	31 15.2			7.5	246	
12 NOV	S11	EP	Z	13 30 11.4			8.2	237	-10.9
		ES	Z	31 35.5			8.2	237	-19.6
12 NOV	S10	EP	Z	13 30 13.9	241.9	.3	8.2	259	-8.1
		E	X	31 31.5			8.2	259	

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
12 NOV	S10	EP	Z	13 37 58.0	241.9	.6	1.5		
		ES	X	38 17.0			1.5		
12 NOV	S13	EP	Z	13 41 19.1	121.0	.2	1.0		
		ES	Y	32.2			1.0		
12 NOV	S11	EP	Z	13 41 37.2			2.5		
		ES	Z	42 6.9			2.5		
12 NOV	S11	EP	Z	13 52 50.5			3.3		
		ES	Z	53 28.8			3.3		

12 NOV 13 56 15.0 40.7N 144.2E OFF E CST OF HONSHU, JAPAN  
H = 33 KM MAG = 4.5

12 NOV	S7	EP	Z	13 57 39.6	48.1	.1	6.4	229	-9.8
		E	X	58 40.6			5.4	229	
		E	X	14 1 57.1			6.4	229	
		E	X	7 4.0			6.4	229	
12 NOV	S9	EP	Z	13 57 58.7	604.1	.4	7.8	239	-9.6
		E	Z	58 7.2			7.8	239	
		E	Y	59 11.6			7.8	239	
		E	Y	14 5 .8			7.8	239	
12 NOV	S10	EP	Z	13 58 10.5	322.6	.3	8.3	253	-4.6
		E	X	59 29.6			8.3	253	
12 NOV	S13	EP	Z	13 58 27.8			9.8	228	-9.0
		E		59 59.4			9.8	228	
12 NOV	S4	EP	Z	13 57 20.5	846.8	.3	5.1	220	-10.3
		E	Y	27.9			5.1	220	
		E	Y	58 06.7			5.1	220	
12 NOV	S11	EP	Z	13 58 08.2			8.6	231	-12.1
		ES	Z	59 30.6			8.6	231	-26.9

12 NOV	S10	EP	Z	14 5 49.9	201.6	.3	1.0		
		ES	Y	6 3.1			1.0		
12 NOV	S4	EP	Z	14 6 35.4			.5		
		ES	Y	43.0			.5		
12 NOV	S7	EP	Z	15 43 4.7			1.0		
		ES	X	18.1			1.0		
		E	X	56.0			1.0		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
12 NOV	S4	EP	Z	15 49	47.5				
		E	Y		56.4				
		E	Y	50	33.1				
12 NOV	S7	EP	Z	15 50	7.2				
		ES	X	51	9.8		5.4		
							5.4		
12 NOV	S4	EP	Z	16 39	3.8				
		ES	Y		11.3		.5		
							.5		
12 NOV	S11	EP	Z	16 43	59.5				
12 NOV	S4	EP	Z	16 55	.9				
		ES	Y		8.4		.5		
							.5		
12 NOV	S4	EP	Z	17 4	8.1	121.0	.3	3.8	*
		ES	Y		52.9				
12 NOV	S7	EP	Z	17 4	28.7	32.1	.1	3.8	*
		ES	X	5	30.2			5.4	*
12 NOV	S9	EP	Z	17 4	46.6	121.0	.3	5.4	*
		ES	Y	5	58.3			R	*
12 NOV	S11	EP	P	17 4	55.7			R	*
		ES	Z	6	18.8			R	*
12 NOV	S10	EP	Z	17 4	58.0	80.6	.3	R	*
		ES	X	6	17.6			R	*



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
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12 NOV 17 15 53.0 41.5N 144.3E HOKKAIDO, JAPAN REGION  
H = 33 KM MAG = 4.6

12 NOV	S4	EP	Z	17 16 54.9	1.50	.5	4.4	225	-4.4
		E	Z	17 5.1			4.4	225	
		ES	Y	42.4			4.4	225	
12 NOV	S7	EP	Z	17 17 14.9	32.1	.1	5.8	233	-7.9
		SS	X	18 17.6			5.8	233	-4.1
		E	X	22 9.9			5.8	233	-7.8
		E	X	23 54.3			5.8	233	
12 NOV	S9	EP	Z	17 17 33.6	685.5	.3	7.3	244	-5.6
		E	Y	18 46.3			7.3	244	
		E	Y	24 40.1			7.3	244	
		E	Z	25 11.7			7.3	244	
12 NOV	S10	EP	Z	17 17 44.7	282.3	.4	7.9	258	-3.3
		ES	X	19 4.5			7.9	258	-12.5
12 NOV	S11	EP	Z	17 17 42.7			8.0	235	-7.2
		E	Z	19 5.4			8.0	235	
12 NOV	S13	EP	Z	17 17 37.6	161.3	.7		R	
		ES	Y	19 34.1				R	
12 NOV	S10	EP	Z	17 25 34.0	322.6	.3	2.3		
		ES	X	26 2.0			2.3		
12 NOV	S4	EP	Z	17 31 10.9	201.6	.2	.5		
		ES	Y	17.7			.5		

12 NOV 17 33 52.0 45.1N 151.7E KURILE IS  
H = 33 KM MAG = 4.8

12 NOV	S7	EP	Z	17 34 13.4	999.9		.8	92	6.2
12 NOV	S9	EP	Z	17 34 8.3	999.9		.9	277	-3.3
12 NOV	S11	+IP	Z	17 34 15.5	2.10	.3	1.7	213	-3.7
12 NOV	S4	EP	Z	17 34 32.3	806.5	.2	2.3	79	3.7
12 NOV	S10	EP	Z	17 34 32.1	806.5	.2	2.5	306	.5
		ES	X	35 2.1			2.5	306	.5
12 NOV	S13	EP	Z	17 34 33.7	241.9	.3	3.0	211	-4.0
		E	Z	35 3.2			3.0	211	

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
12 NOV	S4	EP	Z	17 49 28.4	887.1	.3	3.9		*
		E	Z	38.5			3.9		
		ES	Y	50 14.1			3.9		
12 NOV	S7	EP	Z	17 49 48.0	161.3	.1	5.3		*
		ES	X	50 48.8			5.3		
12 NOV	S9	EP	Z	17 50 7.0	564.5	.3	R		*
		E	Z	25.4			R		
		ES	Y	51 19.5			R		
		E	Y	57 33.2			R		
12 NOV	S11	EP	P	17 50 16.2			R		*
		ES	Z	51 40.5			R		
12 NOV	S10	EP	Z	17 50 18.9	241.9	.3	R		*
		ES	X	51 38.1			R		
12 NOV	S13	EP	Z	17 50 35.3	80.4	.3	R		*
		ES	Y	52 10.6			R		
12 NOV	S10	EP	Z	17 58 51.9			1.9		
		ES	X	59 15.1			1.9		
12 NOV	S4	EP	Z	18 29 42.7	201.6	.1	.4		
		ES	Y	47.7			.4		
12 NOV	18 45	1.0	15.6S	167.3E	NEW HEBRIDES IS				
					H = 40 KM		MAG = 5.2		
12 NOV	S9	EP	Z	18 55 18.8	161.3	.5	61.7	164	1.5
12 NOV	S7	EP	Z	18 55 27.4			62.3	162	5.8
12 NOV	S4	EP	Z	18 55 20.9	201.6	.8	62.4	159	-1.1
12 NOV	S11	EP	Z	18 55 27.0	524.2	.6	63.1	165	.1
12 NOV	S13	EP	Z	18 55 37.3	241.9	.6	64.1	166	3.9
12 NOV	S11	EP	Z	19 11 32.0			.5		
		ES	Z	38.8			.5		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
12 NOV	S7	EP	Z	19 24 10.9	80.6	.1	.9		*
		ES	X	22.6			.9		
12 NOV	S4	EP	Z	19 24 17.5	121.0	.3	1.3		*
		E	Y	29.7			1.3		
		ES	Y	34.3			1.3		
12 NOV	S10	EP	Z	19 24 29.0			4.4		*
		ES	Y	25 19.5			4.4		
12 NOV	S11	EP	Z	19 24 38.8	121.0	.1	2.7		*
		ES	Z	25 10.9			2.7		
12 NOV	S9	E	Y	19 24 49.3					*
		E	Y	27 40.6					
		E	Y	29 5.4					
12 NOV	S7	E	Z	19 27 2.1					*
12 NOV	S4	EP	Z	19 27 9.3	121.0	.3	1.3		*
		E	Y	20.8			1.3		
		ES	Y	25.5			1.3		
12 NOV	S11	EP	Z	19 27 30.1	64.1	.2	2.7		*
		ES	Z	28 1.8			2.7		
12 NOV	S10	EP	Z	19 27 36.3	80.6	.3	2.9		*
		ES	Y	28 10.6			2.9		
12 NOV	S13	E	Z	19 28 32.3	201.6	.3			*
12 NOV	S7	EP	Z	19 45 38.5			.9		*
		ES	X	50.8			.9		
12 NOV	S4	EP	Z	19 45 48.3			1.3		*
		ES	Y	46 5.0			1.3		
12 NOV	S11	EP	P	19 46 7.5			2.6		*
		ES	Z	38.8			2.6		
12 NOV	S11	EP	P	19 56 26.3					
12 NOV	S9	EP	Z	19 56 44.6	80.6	.2	1.2		
		ES	Y	59.9			1.2		
12 NOV	S11	-IP	Z	20 0 9.8	967.7	.1	.4		
		ES	Z	14.8			.4		
12 NOV	S4	EP	Z	20 10 8.0	121.0	.2	.5		
		ES	Y	15.4			.5		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
12 NOV	S13	EP	Z	20 10 25.1	161.3	.3	1.2		*
		ES	Y	40.6			1.2		
12 NOV	S9	EP	Z	20 10 25.2	201.6	.2	1.2		*
		ES	Y	40.7			1.2		
		E	Z	11 35.2			1.2		
12 NOV	S7	EP	Z	20 10 36.4			2.2		*
		ES	X	11 2.9			2.2		

12 NOV	S4	EP	Z	20 10 55.6			3.3		
		ES	Y	11 34.4			3.3		

12 NOV	S10	EP	Z	20 11 19.1	80.6	.1	.2		
		ES	Y	20.7			.2		

12 NOV 20 30 38.0 47.0N 152.6E OBS PRELIMINARY EPICENTER -- (7)  
H = 0 KM

12 NOV	S11	-IP	Z	20 30 44.3	1.2U	.1	.6	331	-8.7
		E	Z	50.0			.6	331	
12 NOV	S13	EP	Z	20 30 57.4	201.6	.2	1.1	232	-2.7
		E	Z	31 .7			1.1	232	
		ES	Y	13.1			1.1	232	-1.8
12 NOV	S7	EP	Z	20 31 17.9			2.4	37	-0.7
		E	X	32 4.5			2.4	37	
12 NOV	S4	EP	Z	20 31 36.2			3.7	50	-1.3
		ES	Y	32 20.3			3.7	50	4.5
12 NOV	S9	EP	M	20 30 59.6	322.6	.2	1.3	352	-14.1
		E	Z	31 01.8			1.3	352	-4.6
		ES	Y	15.9			1.3	352	
		E	Z	32 25.9			1.3	352	

12 NOV	S10	E	X	20 31 49.0					
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12 NOV	S4	EP	Z	20 44 41.7			5.8		
		ES	Y	45 48.7			5.8		

12 NOV	S7	-IP	Z	21 58 17.7	362.9	.2	.8		
		ES	X	28.9			.8		

12 NOV	S4	EP	Z	21 58 27.0	121.0	.3	1.4		
		ES	Y	44.8			1.4		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
12 NOV	S13	-IP	Z	22 24 59.0	241.9	.1	.5		
		ES	Y	25 5.4			.5		
12 NOV	S11	EP	Z	22 25 10.6			1.1		
		ES	Z	25.2			1.1		

12 NOV 23 4 58.8 41.7N 144.2E HOKKAIDO, JAPAN REGION  
H = 33 KM MAG = 4.7

12 NOV	S4	EP	Z	23 6 .0	483.9	.3	4.3	228	-3.8
		E	Z	1.3			4.3	228	
		ES	Y	47.7			4.3	228	-5.1
12 NOV	S7	EP	Z	23 6 20.2	201.6	.2	5.7	235	-3.6
		ES	X	7 19.7			5.7	235	-9.8
		E	P	12 56.8			5.7	235	
12 NOV	S9	EP	Z	23 6 39.0	1.7U	.4	7.2	246	-5.4
		E	Z	47.5			7.2	246	
		E	Y	7 51.0			7.2	246	
		E	Y	13 43.5			7.2	246	
12 NOV	S10	EP	Z	23 6 48.1	362.9	.5	7.9	259	-5.9
		E	X	33 56.6			7.9	259	
		E	X	14 33.7			7.9	259	
12 NOV	S11	EP	Z	23 6 49.2			7.9	236	-5.5
		ES	Z	8 10.7			7.9	236	-13.7
12 NOV	S13	EP	Z	23 7 5.2	80.6	.3	9.1	233	-5.4
		ES	Y	8 40.0			9.1	233	-12.9

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
12 NOV	23 31	3.0	46.3N	153.0E	KURILE EXPLOSION H = 0 KM				
12 NOV	S11	+IP	Z	23 31 8.3					
12 NOV	S9	EP	Z	23 31 27.8	806.5	.5	.2	180	-3.0
		ES	Y	40.3			1.3		-0.5
		ET	P	32 47.9			1.3		-1.3
12 NOV	S13	EP	Z	23 31 27.3	564.5	.6	1.3		
		ES	Y	38.2			1.5	203	-3.6
		ET	P	32 50.2			1.5	203	-4.6
12 NOV	S7	EP	Z	23 31 38.7			1.5	203	
		ES	Z	32 10.7			2.1	55	-1.0
12 NOV	S10	EP	Z	23 31 49.0			2.1	55	-24.7
		ES	X	32 5.1			2.9	338	-2.2
		ET	P	34 53.2			2.9	338	-0.2
12 NOV	S4	EP	Z	23 31 57.6			2.9	338	
		E	Y	32 7.4			3.6	61	-3.1
		ES	Y	40.0			3.6	61	
		ET	P	35 40.3			3.6	61	5.2
12 NOV	S4	+IP	Z	23 48 5.7	645.2	.2	.6		
		ES	Y	14.4			.6		
13 NOV	S7	EP	Z	0 11 17.1	80.6	.1	.5		
		ES	X	23.0			.5		
13 NOV	S4	EP	Z	0 51 7.9	121.0	.1			
		E	Y	52 10.1					
13 NOV	S4	EP	Z	0 58 6.5	999.9				
		E	Z	23.3					
13 NOV	S7	-IP	Z	0 58 24.9	483.9	.3	2.5		
		ES	X	55.2			2.5		
13 NOV	S9	EP	Z	0 58 45.3	564.5	.2	3.8		
		E	Z	53.5			3.8		
		ES	Y	59 29.5			3.8		
13 NOV	S11	+IP	Z	0 58 49.9	64.1	.1	4.3		
		ES	Z	59 39.4			4.3		
13 NOV	S10	EP	Z	0 59 1.9	403.2	.2	5.1		
		ES	X	1 0 .5			5.1		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
13NOV	S11	EP	P	1 21 17.6			.4		
		ES	Z	22.9			.4		
13NOV	S4	EP	Z	2 7 3.2	201.6	.2	.5		
		ES	Y	9.0			.5		
13NOV	S13	EP	Z	2 10 54.1	80.6	.3	1.5		
		ES	Y	11 12.9			1.5		
13NOV	S11	EP	P	2 52 48.8			.4		
		ES	Z	54.0			.4		

13NOV 2 56 30.2 41.4N 144.3E HOKKAIDO, JAPAN REGION  
H = 63 KM MAG = 4.3

13NOV	S4	EP	Z	2 57 30.1	846.8	.2	4.5	225	-7.3
		E	Y	37.7			4.5	225	
		ES	Y	58 14.9			4.5	225	
13NOV	S7	EP	Z	2 57 49.6	64.1	.1	5.9	233	-14.1
		ES	Y	58 51.5			5.9	233	-7.0
		E	P	3 4 29.1			5.9	233	-12.0
13NOV	S9	EP	Z	2 58 8.6	846.8	.3	7.3	244	-7.9
		E	Y	59 20.0			7.3	244	
		E	Y	3 5 22.7			7.3	244	
13NOV	S10	EP	Z	2 58 18.9	121.0	.1	7.9	257	-6.1
		E	X	59 38.2			7.9	257	
		E	Y	3 6 6.8			7.9	257	
13NOV	S11	EP	Z	2 58 17.5			8.1	234	-9.8
		ES	Z	59 40.3			8.1	234	-17.7
13NOV	S13	EP	Z	2 58 34.4			9.2	231	-8.9
		E	Y	3 0 8.7			9.2	231	

13NOV S13 EP Z 3 4 44.5 241.9 .1

13NOV	S7	-IP	Z	3 49 5.7	403.2	.2	.8		.
		ES	X	16.6			.8		.
13NOV	S4	EP	Z	3 49 7.5	121.0	.2	.8		.
		ES	Y	18.1			.8		.
13NOV	S11	EP	P	3 49 35.3					.



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
13NOV	3 51	26.0	45.CN	151.5E	OBS PRELIMINARY EPICENTER -- (5)				
					H = 0 KM				
13NOV	S7	EP	Z	3 51 33.8			.7	100	-4.1
13NOV	S9	EP	Z	3 51 44.4	443.5	.2	1.1	271	-3.6
		ES	Y	57.8			1.1	271	-5.0
13NOV	S11	EP	Z	3 51 53.9	80.1	.2	1.0	216	-5.0
13NOV	S4	EP	Z	3 51 58.9	161.3	.3	2.2	81	-4.9
		ES	Y	52 9.4			2.2	81	-0.1
		E	Y	29.0			2.2	81	
13NOV	S10	EP	Z	3 52 5.7	161.3	.1	2.6	303	-4.3
		ES	X	36.7			2.6	303	20.0
13NOV	S13	EP	Z	3 52 12.3			3.1	212	-5.0
		ES	Y	48.0			3.1	212	10.7
13NOV	S7	EP	Z	4 10 3.2	443.5	.2	.9		*
		ES	X	14.7			.9		
13NOV	S9	EP	Z	4 10 8.8	282.3	.2	1.0		*
		ES	Y	22.4			1.0		
		E	Y	11 23.3			1.0		
13NOV	S11	EP	P	4 10 18.5					*
13NOV	S7	EP	Z	5 5 35.4	403.2	.1	.6		*
		ES	X	43.7			.6		
13NOV	S4	EP	Z	5 5 46.2			1.1		*
		ES	Y	6 2.2			1.3		
13NOV	S11	EP	P	5 6 1.0					*
13NOV	S11	EP	P	5 33 54.5			.4		
		ES	Z	59.6			.4		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
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13NOV 5 48 3.0 47.0N 153.9E KURILE EXPLOSION  
H = 0 KM

13NOV	S13	EP	Z	5 48 15.9	604.8	.4	.7	176	-3.4
		E	Z	18.0			.7	176	
		E	Z	24.0			.7	176	
		ET	P	50.4			.7	176	
13NOV	S11	EP	P	5 48 18.6			.8	51	-2.6
		E	P	49 7.3			.8	51	
13NOV	S9	EP	Z	5 48 37.6	201.6	.4	2.1	17	-2.1
		E	Z	49 3.6			2.1	17	
		ET	P	50 41.1			2.1	17	
13NOV	S7	EP	Z	5 48 42.6	887.1	.3	3.0	50	-10.2
		ES	X	54.7			3.0	50	-14.8
		E	P	51 55.4			3.0	50	
13NOV	S10	E	Z	5 49 12.8			3.4	352	
		ES	Y	34.7			3.4	352	7.5
		ET	P	52 25.8			3.4	352	

13NOV S4 ET P 5 53 42.1

13NOV S4 EP Z 6 26 .2 161.3 .2 1.7  
ES Y 21.2 1.7

13NOV S11 EP P 6 38 26.5  
ES Z 31.2 .4  
.4

13NOV 6 42 49.0 44.8N 149.2E OBS PRELIMINARY EPICENTER -- (4)  
H = 50 KM

13NOV	S4	EP	Z	6 43 1.0	443.5	.2	.5	77	-0.1
		ES	Y	9.0			.5	77	.9
13NOV	S7	EP	Z	6 43 08.2			1.0	251	.9
		ES	X	22.4			1.0	251	1.5
13NOV	S9	EP	Z	6 43 30.2	322.6	.2	2.7	267	-1.0
		E	Z	38.1			2.7	267	
		ES	Y	58.6			2.7	267	
13NOV	S11	EP	Z	6 43 36.4			3.2	230	-4.5
		E	Z	44 9.7			3.2	239	-1.2
13NOV	S10	EP	Z	6 43 48.2	161.3	.2	4.0	289	-1.8
		ES	Y	44 34.2			4.0	289	-2.5

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
13NOV	S7	EP	Z	7 58 43.1	999.9		.9		
		ES	X	55.0			.9		
13NOV	S11	EP	P	8 19 33.5			1.0		
		ES	Z	46.6			1.0		
13NOV	S11	EP	Z	9 42 50.7			.6		
		ES	Z	59.4			.6		
13NOV	S11	EP	Z	10 8 17.1	201.6	.1	1.0		
		ES	Z	30.7			1.0		
13NOV	S7	EP	Z	10 13 35.4	64.1	.1	1.2		
		ES	Z	50.8			1.2		
13NOV	S4	EP	Z	10 24 11.1	201.6	.2	.5		
		ES	Y	17.0			.5		
13NOV	S11	EP	P	10 53 15.7			.5		
		ES	Z	22.0			.5		
13NOV	S13	EP	Z	11 43 17.7	282.3	.2	.5		
		E	Z	21.0			.5		
		ES	Y	25.1			.5		
13NOV	S11	EP	Z	11 43 25.9	48.1	.2	1.1		
		ES	Z	40.0			1.1		
13NOV	S7	EP	Z	12 55 57.2			1.2		
		ES	X	56 12.0			1.2		
13NOV	S4	EP	Z	12 59 26.9	282.3	.2	.5		
		ES	Y	32.5			.5		
13NOV	S11	+IP	Z	13 32 8.3	1.2U	.2	.5		
		ES	Z	14.6			.5		
13NOV	S13	EP	Z	15 6 31.2	121.0	.1	1.1		
		ES	Y	45.0			1.1		
13NOV	S11	EP	Z	15 6 38.4	121.0	.2	1.6		
		ES	Z	57.8			1.6		
13NOV	S4	EP	P	15 12 28.0			2.5		
		ES	Y	58.3			2.5		
13NOV	S7	EP	Z	15 27 48.2	322.6	.1	.5		
		ES	X	56.2			.5		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
13NOV	S4	EP	Z	16 33 18.4			.6		
		ES	Y	26.5			.6		
13NOV	S7	EP	Z	16 33 29.8			1.5		
		ES	X	48.1			1.5		
13NOV	S4	EP	Z	17 2 43.8			.6		
		ES	Y	52.7			.6		
13NOV	S7	EP	Z	17 2 54.8			1.5		
		ES	X	3 13.8			1.5		
13NOV	S7	EP	Z	17 56 38.3	32.1	.1	.9		
		ES	X	50.7			.9		
13NOV	S9	EP	Z	18 6 41.8	201.6	.2	.2		
		ES	Y	43.3			.2		
13NOV	S7	EP	Z	18 11 40.7	201.6	.1	.5		
		ES	X	46.9			.5		
13NOV	S7	EP	Z	18 14 14.7	80.6	.1	.5		
		ES	X	21.0			.5		
13NOV	S7	EP	Z	18 22 23.1			1.6		
		ES	X	42.9			1.6		
13NOV	S11	EP	Z	18 26 25.9	64.1	.1	.5		
		ES	Z	32.0			.5		
13NOV	S11	EP	Z	21 2 47.3	282.3	.1	.4		
		ES	Z	52.3			.4		

13NOV 21 10 4.0 53.7N 169.3E KOMANDORSKY IS REGION  
H = 33 KM MAG = 4.7

13NOV	S13	EP	Y	21 12 50.5			11.5	53	1.5
		E	Y	14 39.8			11.5	53	
13NOV	S9	EP	Z	21 13 14.3	201.6	.2	13.7	45	-3.9
		E	Y	15 28.7			13.7	45	
		E	Y	24 54.6			13.7	45	
		E	Y	26 56.7			13.7	45	
13NOV	S10	EP	Z	21 13 17.9	161.3	.3	14.0	39	-3.8
		E	X	15 40.1			14.0	39	



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
13 NOV	S11	EP	Z	21 23 39.6			1.6		
		ES	Z	59.0			1.6		
13 NOV	S10	EP	Z	21 27 12.9			4.3		
		ES	X	28 2.6			4.3		
		E	X	29 29.5			4.3		
13 NOV	S4	EP	Z	22 10 40.2			1.4		
		ES	Y	58.0			1.4		
13 NOV	S11	EP	Z	22 52 53.0			1.0		
		ES	Z	53 5.7			1.0		
14 NOV	S4	EP	Z	0 34 6.3			R		
		ES	Y	54.1			R		
14 NOV	S11	EP	Z	0 40 29.8			.8		
		ES	Z	40.2			.8		
14 NOV	S4	EP	Z	1 39 30.6			R		
		ES	Y	40 8.4			R		
14 NOV	3 8	31.3	2.0N	99.1E	N SUMATRA				
					H = 181 KM				
						MAG = 5.3			
14 NOV	S9	EP	Z	3 18 45.7	322.6	.4	63.8	244	-.2
		EPCP	Z	19 14.1			63.8	244	
14 NOV	S13	EP	Z	3 18 56.8	362.9	.5	65.4	244	-6.2
14 NOV	S7	EP	Z	3 57 54.9			1.3		
		ES	X	58 10.9			1.3		
14 NOV	S11	EP	P	3 58 2.2			1.5		
		ES	Z	20.7			1.5		
14 NOV	S7	EP	Z	4 34 24.1	32.1	.1	1.2		*
		ES	X	39.3			1.2		
14 NOV	S11	EP	Z	4 34 35.0			1.6		*
		ES	Z	55.0			1.6		
14 NOV	S9	E	Y	4 34 36.1					*
		E	Y	35 33.0					



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
14 NOV	S11	EP	P	8 24 26.7			.3		
		ES	Z	30.0			.3		
14 NOV	S7	EP	Z	9 12 8.1	32.1	.1	1.3		*
		ES	X	24.1			1.3		
14 NOV	S11	EP	P	9 12 13.3			1.5		*
		ES	Z	32.5			1.5		
14 NOV	S9	E	Y	9 12 21.9					*
		E	Y	13 27.6					
14 NOV	S13	EP	Z	10 17 7.0	362.9	.2	.7		
		F	Z	10.3			.7		
		ES	Y	16.5			.7		
14 NOV	S11	EP	Z	10 17 23.1			1.4		
		ES	Z	40.4			1.4		
14 NOV	S11	EP	P	10 48 20.1			2.8		*
		ES	Z	53.5			2.8		
14 NOV	S13	EP	Z	10 48 21.8	80.6	.2	4.4		*
		ES	Y	49 12.4			4.4		
14 NOV	S7	EP	Z	10 48 23.5			3.3		*
		ES	X	49 1.8			3.3		
14 NOV	S9	EP	Z	10 48 29.6	685.5	.3	3.4		*
		ES	Y	49 9.2			3.4		
14 NOV	S10	EP	Z	10 48 51.9			5.0		*
		ES	X	49 49.7			5.0		
14 NOV	S4	EP	Z	10 54 16.4			.5		
		ES	Y	23.8			.5		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
14 NOV	S10	EP	Z	11 31 7.0	161.3	.2	5.4		*
14 NOV	S7	ES	X	32 8.7			5.1		*
14 NOV	S9	EP	Z	11 31 16.1	282.3	.2	.5		*
		ES	X	23.8			.5		*
		EP	Z	11 31 16.3	483.9	.2	.9		*
		ES	Y	28.3			.9		*
14 NOV	S11	E	P	32 25.6			.9		
		EP	P	11 31 25.6			.9		
14 NOV	S4	ES	Z	43.5			1.4		*
		EP	Z	11 31 34.4			1.4		*
		ES	Y	32 10.1			3.0		*
							3.0		
14 NOV	S13	EP	Z	12 44 9.3	161.3	.4	1.9		*
		E	Z	18.0			1.9		
		ES	Y	33.0			1.9		
14 NOV	S11	E	Y	45 39.9			1.9		
		EP	Z	12 44 23.6			1.9		
14 NOV	S10	ES	Z	57.3			2.8		*
		EP	Z	12 44 42.3			2.8		
14 NOV	S9	ES	X	45 30.6			4.2		*
		EP	Z	12 45 14.0	725.8	.2	4.2		*
		ES	Y	46 22.5			R		*
14 NOV	S7	E	Z	48 28.2			R		
		EP	Z	12 45 25.3	201.6	.1	R		
14 NOV	S4	ES	X	35.0			.7		*
		EP	Z	12 45 26.5	161.3	.2	.7		*
		ES	Y	38.1			.9		*
							.9		
14 NOV	S11	E	Z	12 47 36.6					
14 NOV	S4	EP	Z	14 1 55.3			4.7		
		ES	Y	2 49.6			4.7		
14 NOV	S9	EP	Z	14 2 30.3	241.9	.2	R		
		E	Z	38.8			R		
		ES	Y	3 48.9			R		
14 NOV	S11	EP	P	14 41 41.4			.3		
		ES	Z	45.1			.3		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
14NOV	S7	EP	Z	16 29 49.0	241.9	.2	1.1		*
		ES	X	30 3.6			1.1		
14NOV	S11	EP	P	16 29 57.3			1.7		*
		ES	Z	30 18.7			1.7		
14NOV	S4	EP	Z	16 30 1.1	201.6	.2	1.9		*
		ES	Y	24.9			1.9		
14NOV	S13	EP	Z	16 30 11.9			2.7		*
		ES	Y	44.5			2.7		
14NOV	S9	E	Y	16 30 19.3					*
		E	Y	31 18.1					
14NOV	S10	EP	Z	16 30 21.5	241.9	.2	3.4		*
		E	Z	22.9			3.4		
		E	Z	28.4			3.4		
		ES	X	31 1.2			3.4		
14NOV	S4	EP	Z	17 58 40.6	161.3	.2	.8		
		ES	Y	51.6			.8		
14NOV	S7	EP	Z	17 58 49.4			1.5		
		ES	X	59 8.2			1.5		
14NOV	S7	EP	Z	18 12 59.0			1.5		
		ES	X	13 18.2			1.5		
14NOV	S4	EP	Z	20 11 10.1			.8		
		ES	Y	21.4			.8		
14NOV	S7	EP	Z	20 11 39.0			1.7		
		ES	X	12 .4			1.7		
14NOV	S10	EP	Z	20 12 59.5	161.3	.2	.2		
		ES	X	13 1.5			.2		
14NOV	S4	EP	Z	20 53 16.9			R		
		ES	Y	54 41.7			R		
14NOV	S7	EP	Z	20 54 25.3			1.3		*
		ES	X	42.2			1.3		
14NOV	S9	EP	Z	20 54 44.7	282.3	.2	1.9		*
		ES	Y	55 7.7			1.9		
		E	Z	56 5.1			1.9		
		E	Z	57 19.6			1.9		
14NOV	S11	EP	P	20 54 53.4			3.1		*
		ES	Z	55 29.4			3.1		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
14 NOV	S11	EP	P	21 50 18.9			1.2		
		ES	Z	34.5			1.2		
14 NOV	S11	EP	Z	21 57 42.4	322.6	.1	1.9		
		ES	Z	58 5.4			1.9		
14 NOV	S13	EP	Z	21 57 58.0			1.4		
		ES	Y	58 15.4			1.4		
14 NOV	S11	EP	Z	22 14 4.6	362.9	.2	1.4		
		ES	Z	22.4			1.4		
14 NOV	S9	E	Y	22 14 44.9					
14 NOV	S13	EP	Z	23 1 11.6	999.9				*
14 NOV	S11	EP	Z	23 1 19.4	201.6	.2	1.5		*
		ES	Z	38.0			1.5		
14 NOV	S9	EP	Z	23 1 23.3	201.6	.2	3.0		*
		E	Z	38.2			3.0		
		ES	Y	58.3			3.0		
		E	Z	3 14.9			3.0		
14 NOV	S7	E	Z	23 1 52.3					*
14 NOV	S4	EP	Z	23 2 9.9			R		*
		ES	Y	3 3.1			R		
15 NOV	S11	EP	Z	2 3 45.6	282.3	.1	.5		
		ES	Z	50.9			.5		
15 NOV	S11	EP	Z	2 32 1.2			N		*
		ES	Z	33 42.8			N		
15 NOV	S4	EP	Z	2 32 30.3	685.5	.3	.8		*
		ES	Y	40.7			.8		
15 NOV	S7	EP	Z	2 32 39.8	121.0	.1	2.1		*
		ES	X	33 5.0			2.1		
15 NOV	S9	EP	Z	2 32 59.3	806.5	.2	3.2		*
		ES	Y	33 37.1			3.2		
15 NOV	S10	EP	Z	2 33 18.0	483.9	.2	4.7		*
		ES	X	34 12.7			4.7		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
15 NOV	S11	-IP	Z	2 37 38.8	999.9		.4		*
		ES	Z	44.0			.4		
15 NOV	S13	EP	Z	2 37 48.5	80.6	.2	1.1		*
		ES	Y	38 3.1			1.1		
15 NOV	S9	EP	Z	2 37 56.8			1.4		*
		ES	Y	38 14.8			1.4		
		E	Z	39 17.6			1.4		
15 NOV	S13	EP	Z	3 3 35.0	90.6	.1	.8		
		ES	Y	45.7			.6		
15 NOV	S11	EP	P	3 3 41.9					
15 NOV	S11	+IP	Z	3 33 49.9	362.9	.1	.4		
		ES	Z	54.1			.4		
15 NOV	S7	EP	Z	6 41 4.1			.4		
		ES	X	8.2			.4		
15 NOV	7 45 41.0	45.2N	150.3E	OBS PRELIMINARY EPICENTER -- (4)					
				H = 85 KM					
15 NOV	S7	EP	Z	7 45 52.2	524.2	.2	.2	294	-1.1
		ES	X	57.1			.2	294	-5.3
15 NOV	S4	EP	Z	7 46 5.2			1.4	68	-0.6
		ES	Y	21.7			1.4	68	-1.3
15 NOV	S9	EP	Z	7 46 11.6			1.9	277	-1.1
		ES	Y	33.3			1.9	277	-2.6
15 NOV	S11	EP	Z	7 46 16.5			2.3	236	-1.1
		E	Z	43.7			2.3	236	
15 NOV	S7	EP	Z	7 58 22.1			1.0		
		ES	X	34.8			1.0		
15 NOV	S9	EP	Z	9 43 14.0	161.3	.2	.2		
		ES	Y	16.5			.2		
15 NOV	S11	-IP	Z	10 9 39.4	1.1U	.1	1.1		
		ES	Z	54.1			1.1		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
15NOV	10 20	39.0	41.8N	143.5E	HOKKAIDO, JAPAN REGION H = 45 KM MAG = 4.0				
15NOV	S4	EP	Z	10 21 41.6	241.9	.3	4.6	233	-6.9
		ES	Y	22 28.2			4.6	233	-13.8
15NOV	S7	EP	Z	10 22 1.9			6.1	239	-6.9
15NOV	S9	EP	Z	10 22 17.3	121.0	.2	7.6	249	-12.9
		ES	Y	23 33.0			7.6	249	-23.2
		E	Y	29 58.6			7.6	249	
15NOV	S10	EP	Z	10 22 27.0			8.4	261	-12.5
		ES	X	23 50.2			8.4	261	-24.4
15NOV	S11	EP	P	10 22 31.9			8.3	239	-7.5
		E	Z	23 53.1			8.3	239	
15NOV	S10	EP	Z	10 30 11.9			2.6		
		ES	X	42.7			2.6		
15NOV	S11	EP	Z	10 30 14.6	80.6	.1	1.4		
		ES	Z	32.3			1.4		
15NOV	S7	EP	Z	10 36 53.3	32.1	.1	1.5		•
		ES	X	37 11.9			1.5		
15NOV	S4	EP	Z	10 36 58.1			1.7		•
		ES	Y	37 19.6			1.7		
15NOV	S9	E	Y	10 37 35.1					•
15NOV	S10	EP	Z	10 38 12.9			.2		
		ES	X	14.9			.2		
15NOV	S10	EP	Z	11 12 26.1	161.3	.3	.3		
		ES	X	29.0			.3		
15NOV	S7	EP	Z	11 52 12.1	80.1	.1	.6		
		ES	X	20.7			.6		
15NOV	S7	EP	Z	12 26 38.0	32.1	.1	.5		
		ES	X	44.6			.5		
15NOV	S4	EP	Z	14 48 24.6	80.6	.2	.5		
		ES	Y	31.6			.5		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	MES
15 NOV	S11	EP	P	14 57 46.2			.6		
		ES	Z	54.4			.6		
15 NOV	S9	E	Z	14 59 58.8					
15 NOV	S10	EP	Z	15 0 28.7			.3		
		ES	Y	31.7			.3		
15 NOV	S4	EP	Z	15 38 37.9			.6		
		ES	Y	46.6			.6		
15 NOV	16 19	7.4	51.2N	176.6W	ANDREANOF IS, ALEUTIAN IS				
					H = 49 KM		MAG = 5.0		
15 NOV	S4	EP	Z	16 24 17.1	241.9	.8	24.1	62	-2.5
15 NOV	S7	EP	Z	17 3 29.7	282.3	.1	.6		
		ES	X	38.2			.6		
15 NOV	S4	EP	Z	17 3 40.1			1.1		
		ES	Y	54.4			1.1		
15 NOV	S7	EP	Z	17 27 47.3	161.3	.1	1.6		
		FS	X	28 7.2			1.6		
15 NOV	S9	EP	Z	17 27 58.7	161.3	.2	2.3		
		ES	Y	28 26.6			2.3		
15 NOV	S11	E	Z	18 52 8.5					
15 NOV	S7	EP	Z	20 45 .2	32.1	.1	.5		
		ES	X	6.7			.5		
15 NOV	S7	EP	Z	23 18 56.4	32.1	.1	.5		
		ES	X	19 4.2			.5		
16 NOV	S10	EP	Z	0 1 33.7	161.3	.2	.3		
		ES	Y	37.0			.3		
16 NOV	S4	EP	Z	0 7 34.4	161.3	.1	2.1		
		ES	Y	8 .3			2.1		
16 NOV	S7	EP	Z	0 7 51.8			3.1		
		ES	X	8 28.3			3.1		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
16 NOV	S9	E	Y	0 9 1.7					
16 NOV	S7	E	Z	1 2 31.8					
16 NOV	S7	EP	Z	1 21 21.5					
		ES	X	32.4			.8		
							.8		
16 NOV	S9	EP	Z	2 4 53.2	121.0	.2	1.5		
		ES	Y	5 12.1			1.5		
16 NOV	S11	EP	P	2 21 2.5					
16 NOV	S7	EP	Z	2 25 40.0	201.6	.1	1.4		
		ES	X	57.4			1.4		
16 NOV	S9	E	Y	2 26 24.4					
16 NOV	S7	EP	Z	2 49 11.1	64.1	.2	.5		
		ES	X	17.2			.5		
16 NOV	S9	E	Y	2 59 53.6					
16 NOV	S11	EP	P	4 1 3.2					
16 NOV	S9	E	Y	4 1 52.8					

16 NOV 4 35 7.0 39.8N 142.1E NR E COAST OF HONSHU, JAPAN  
H = 33 KM MAG = 4.1

16 NOV	S7	EP	Z	4 37 7.5			8.2	232	1.2
		ES	X	38 37.9			8.2	232	-.8
16 NOV	S9	EP	Z	4 37 24.2	201.6	.3	9.6	241	-1.5
		ES	Y	39 3.7			9.6	241	-9.8
		E	Y	46 47.2			9.6	241	
16 NOV	S10	EP	Z	4 37 34.0	241.9	.4	10.1	252	1.4
		ES	X	39 19.1			10.1	252	-6.6
16 NOV	S11	EP	P	4 37 34.9			10.4	234	-1.9
		E	Z	39 31.1			10.4	234	
16 NOV	S10	EP	Z	4 47 8.5			4.7		
		ES	X	48 2.6			4.7		
16 NOV	S11	EP	Z	5 2 21.8			2.5		
		ES	Z	51.6			2.5		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
16 NOV	S9	EP	Z	5 2 33.5	201.6	.2	2.2		
		ES	Y	3 .2			2.2		
16 NOV	S7	E	Z	5 24 34.6					
16 NOV	S7	E	Z	5 27 27.4					
16 NOV	S7	EP	Z	6 26 32.9			1.3		
		ES	X	49.7			1.3		
16 NOV	S11	EP	Z	6 33 53.0					
16 NOV	S4	EP	Z	6 48 29.9	524.2	.3	.5		
		ES	Y	37.0			.5		
16 NOV	S7	EP	Z	6 48 52.9			.5		
		ES	X	49 .5			.5		
16 NOV	S4	EP	Z	7 3 4.2			.5		
		ES	Y	11.8			.5		
16 NOV	S11	EP	P	7 44 29.3					
16 NOV	S9	EP	Z	7 44 39.0	121.0	.3	2.1		
		ES	Y	45 4.0			2.1		
16 NOV	S11	EP	P	9 55 46.6			.5		
		ES	Z	52.4			.5		
16 NOV	S11	EP	✓	10 56 45.5			3.4		
		ES	Z	57 25.0			3.4		
16 NOV	S11	EP	Z	11 53 9.9	201.6	.2	.5		
		ES	Z	15.2			.5		
16 NOV	S11	EP	Z	11 55 50.1	833.3	.1	.6		*
		ES	Z	59.0			.6		
16 NOV	S9	EP	Z	11 56 6.0	725.8	.3	2.5		*
		ES	Y	36.0			2.5		
16 NOV	S10	EP	Z	11 56 25.8	161.3	.1	4.0		*
		E	Z	32.9			4.0		
		ES	X	57 12.8			4.0		

DAY	STA	PHASE	C	TIME	AMP	PSR	DIST	AZI	RES
16 NOV	S11	EP	Z	12 19 19.3	443.5	.3	2.4		
		ES	Z	47.5			2.4		
16 NOV	S11	EP	P	14 28 8.6			.4		
		ES	Z	12.7			.4		
16 NOV	S11	EP	P	14 33 42.3			.9		*
		ES	Z	54.6			.9		
16 NOV	S7	EP	Z	14 34 7.2			3.5		*
		ES	X	48.0			3.5		
16 NOV	S9	E	Z	14 34 23.7					*
16 NOV	S9	E	Z	15 3 37.1					
16 NOV	S11	EP	Z	15 18 5.4			.3		
		ES	Z	9.3			.3		
16 NOV	S11	EP	Z	16 10 46.5	241.9	.2	1.9		
		ES	Z	11 10.3			1.9		
16 NOV	S9	EP	Z	16 11 2.9	161.3	.1	2.9		
		ES	Y	37.1			2.9		
16 NOV	S11	EP	P	17 25 50.2			.8		
		ES	Z	26 1.1			.8		
16 NOV	S9	E	Y	17 26 22.8					
16 NOV	S9	E	Y	17 32 51.4					
16 NOV	S10	EP	Z	17 33 28.3	80.6	.1	.1		
		ES	Y	28.7			.1		

16 NOV 18 15 46.1 30.8N 142.0E S OF HONSHU, JAPAN  
H = 33 KM MAG = 4.3

16 NOV	S10	EP	Z	18 19 23.2			16.2	222	-10.0
		E	X	22 11.0			16.2	222	

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
16 NOV	S11	EP	Z	18 17 28.9					
		ES	Z	33.6			.4		
							.4		
16 NOV	S7	E	Z	19 20 11.8					
16 NOV	S7	EP	Z	19 20 11.8					
		ES	X	19.2					
16 NOV	S7	EP	Z	19 51 22.4			5.5		*
		ES	X	52 25.6			5.5		
16 NOV	S9	EP	Z	19 51 41.6	201.6	.2			*
		E	Z	49.2			R		
		ES	Y	52 57.8			R		
16 NOV	S10	EP	Z	19 51 58.2					*
		ES	X	52 1.9			.3		
							.3		
16 NOV	S10	EP	Z	19 53 28.9					
		ES	Y	32.1			.3		
							.3		
16 NOV	2J 44	1.3	46.6N	153.7E	KURILE IS				
					H = 33 KM				
							MAG = 4.8		
16 NOV	S11	-IP	Z	20 44 10.0	999.9		.5	78	-1.6
16 NOV	S9	EP	Z	20 44 24.8	999.9		1.7	17	-3.7
16 NOV	S7	EP	Z	20 44 44.5	1.2U	.6	2.7	55	1.7
		E	Z	45 36.3			2.7	55	
16 NOV	S10	EP	Z	20 44 42.2	604.8	.6	3.0	348	-5.8
		E	Y	47.7			3.0	348	
		ES	X	45 13.6			3.0	348	-9.9
16 NOV	S4	EP	Z	20 45 1.7	1.4U	.4	4.1	61	-1.9
		ES	Y	43.9			4.1	61	-7.6
16 NOV	S11	EP	P	20 51 19.6			.8		
		ES	Z	30.5			.8		
16 NOV	S9	E	Y	20 51 49.8					
		E	Y	52 42.7					
		E	Z	53 16.0					



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
16 NOV	S11	EP	P	21 2 17.1					
		ES	Z	26.7			.7		
16 NOV	S9	E	Z	21 2 48.4			.7		
16 NOV	S11	EP	P	23 34 5.3			.6		
		ES	Z	14.1			.6		
17 NOV	S11	EP	P	0 24 19.8			.5		
		ES	Z	26.9			.5		
17 NOV	S4	EP	Z	2 24 7.2	80.6	.2	.7		
		ES	Y	17.4			.7		
17 NOV	S9	E	Z	2 38 12.3					
17 NOV	S11	EP	P	3 58 13.4			.4		
		ES	Z	17.5			.4		
17 NOV	S4	EP	Z	4 29 2.1			.8		
		ES	Y	12.9			.8		
17 NOV	S7	EP	Z	4 29 3.9	80.6	.1	.9		
		ES	X	16.1			.9		
17 NOV	S11	EP	Z	4 34 1.5	564.5	.1	.4		
		ES	Z	6.5			.4		
17 NOV	S9	E	Y	5 27 14.5					
17 NOV	S7	EP	Z	5 47 4.6	32.1	.1	1.0		
		ES	X	17.7			1.0		
17 NOV	S11	EP	Z	5 47 16.6			1.7		
		ES	Z	38.1			1.7		
17 NOV	S9	E	Y	6 12 5.4					
17 NOV	S7	EP	Z	6 50 59.9			.7		
		ES	X	51 10.0			.7		
17 NOV	S7	EP	Z	9 12 56.3			1.3		
		ES	X	13 12.6			1.3		
17 NOV	S9	EP	Z	9 13 7.2	241.9	.2	2.0		
		ES	Y	31.6			2.0		
17 NOV	S11	EP	Z	11 32 25.5	96.2	.3	3.5		
		ES	Z	33 6.3			3.5		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
17 NOV	S9	E	Z	11 33 33.6					
17 NOV	S7	EP	Z	11 53 30.0	80.6	.1	.5		*
		ES	X	38.0			.5		
17 NOV	S4	EP	Z	11 53 36.6			1.3		*
		ES	Y	52.6			1.3		
17 NOV	S11	EP	P	11 53 57.1			2.7		*
		ES	Z	54 29.1			2.7		
17 NOV	S9	E	Y	11 54 7.7					*
		E	Y	55 51.1					
17 NOV	S7	EP	Z	12 19 18.4			.6		
		ES	X	27.5			.6		
17 NOV	S4	EP	Z	13 14 7.7	121.0	.2	.8		
		ES	Y	18.1			.8		
17 NOV	S7	EP	Z	14 0 7.9	80.6	.1	.5		
		ES	X	15.3			.5		
17 NOV	S11	EP	P	15 11 27.1			.6		
		ES	Z	35.5			.6		
17 NOV	S4	+IP	Z	15 53 7.8	1.00	.2	.4		*
		ES	Y	11.8			.4		
17 NOV	S7	EP	Z	15 53 27.0	161.3	.1	2.2		*
		ES	X	53.1			2.2		
17 NOV	S9	EP	P	15 53 46.0			2.8		*
		ES	Y	54 19.3			2.8		
17 NOV	S10	EP	Z	15 54 40.6			.5		*
		ES	Y	47.0			.5		
17 NOV	S7	E	Z	17 27 6.9					
17 NOV	S7	EP	Z	17 32 16.8	282.3	.1	.8		
		ES	X	27.7			.8		
17 NOV	S9	E	Y	17 32 54.1					

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
17NOV	S9	E	Y	17 37 51.2					
17NOV	S7	EP	Z	18 57 34.6	161.3	.1	.5		
		ES	X	42.4			.5		
17NOV	S7	EP	Z	19 18 54.7			.9		
		ES	X	19 6.9			.9		
17NOV 19 27 5.0 46.2N 153.6E KURILE IS									
					H = 33 KM		MAG = 4.4		
17NOV	S11	-IP	Z	19 27 15.8	999.9		.5	126	.2
17NOV	S9	+IP	Z	19 27 30.6	999.9		1.3	19	4.1
		E	P	47.6			1.3	19	
17NOV	S10	EP	Z	19 27 47.9	282.3	.4	1.3	19	
		E	X	28 4.2			2.7	345	1.5
		ES	X	19.2			2.7	345	
17NOV	S7	EP	Z	19 27 49.9	645.2	.3	2.7	345	1.3
17NOV	S4	EP	Z	19 28 7.2	887.1	.2	2.4	63	7.0
		ES	Y	53.4			3.9	65	3.1
							3.9	65	3.9
17NOV	S11	-IP	Z	19 37 8.4	483.9	.2	2.0		*
		ES	Z	32.5			2.0		
17NOV	S9	EP	Z	19 37 16.1	645.2	.2	2.3		*
		ES	Y	44.1			2.3		
		E	Y	39 18.3			2.3		
17NOV	S7	E	Z	19 37 37.7			N		*
17NOV	S10	EP	Z	19 38 24.2	80.6	.2	.3		*
		ES	Y	27.7			.3		
17NOV	S11	EP	Z	20 6 31.4	322.6	.2	1.5		
		ES	Z	50.5			1.5		
17NOV	S9	E	Y	20 7 10.5					
17NOV	S9	E	Y	20 9 34.2					
17NOV	S11	EP	Z	20 11 8.3	241.9	.2	.3		
		ES	Z	11.9			.3		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
17 NOV	S7	EP	Z	21 52 56.6	121.0	.2	.5		
		ES	X	53 2.4			.5		
17 NOV	S11	EP	Z	22 54 16.4			.4		
		ES	Z	21.5			.4		
17 NOV	S11	EP	P	23 11 14.5			1.3		*
		ES	Z	31.2			1.3		*
17 NOV	S9	EP	Z	23 11 30.0	80.6	.2	2.2		*
		ES	Y	56.8			2.2		*
17 NOV	S7	EP	Z	23 11 49.3			4.0		*
		ES	X	12 35.9			4.0		
17 NOV	S11	EP	P	23 20 19.9			1.2		*
		ES	Z	34.8			1.2		*
17 NOV	S9	EP	Z	23 20 20.6	201.6	.2	2.6		*
		ES	Y	51.3			2.6		*
17 NOV	S7	EP	Z	23 20 42.8			4.2		*
		ES	X	21 31.6			4.2		
		E	X	48.0			4.2		
18 NOV	S7	E	Z	0 29 29.4					
18 NOV	S11	EP	P	2 1 28.5			1.3		
		ES	Z	45.0			1.3		
18 NOV	S11	EP	Z	3 43 14.3			1.9		
		ES	Z	37.3			1.9		
18 NOV	S7	EP	Z	5 33 14.8			.5		
		E	X	18.3			.5		
		ES	X	20.8			.5		
18 NOV	S4	+IP	Z	5 54 13.6	322.6	.1	.5		
		ES	Y	21.3			.5		
18 NOV	S7	EP	Z	5 54 25.7			.5		
		ES	X	31.8			.5		
		E	X	43.6			.5		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
18 NOV	S7	EP	Z	6 48 36.6					
		ES	X	49 30.8				4.7	*
18 NOV	S9	EP	Z	6 48 54.9	121.0	.3		4.7	*
		ES	Y	49 53.8				5.1	*
18 NOV	S10	EP	Z	6 49 6.3				5.1	*
		ES	X	50 15.3				6.0	*
								6.0	
18 NOV	S7	E	Z	7 4 39.4					
18 NOV	S7	EP	Z	8 7 6.7				2.0	
		ES	X	30.8				2.0	
18 NOV	S11	EP	Z	8 47 43.1				5.8	*
		ES	Z	48 49.9				5.8	
18 NOV	S9	EP	Z	8 48 4.7	80.6	.2		R	*
		ES	Y	49 17.0				R	
18 NOV	S7	EP	Z	8 48 22.8				R	*
		ES	X	49 42.2				R	
18 NOV	S10	EP	Z	8 49 43.2	241.9	.0		.3	*
		ES	Y	46.3				.3	
18 NOV	S7	E	Z	9 5 58.7					
18 NOV	S7	EP	Z	9 15 52.9	80.6	.1		.5	
		ES	X	16 .5				.5	
18 NOV	S7	EP	Z	10 23 17.1				3.4	
		E	X	25.1				3.4	
		ES	X	57.0				3.4	
18 NOV	S4	EP	Z	10 23 17.8	403.2	.2		.7	
		ES	Y	28.0				.7	
18 NOV	S7	E	X	10 48 51.1					
18 NOV	S7	EP	Z	11 2 7.1				.5	
		ES	X	13.0				.5	



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
18 NOV	S7	EP	Z	11 30 46.9					
		E	X	52.1			.9		
		ES	X	59.2			.9		
		E	X	31 52.0			.9		
18 NOV	S11	EP	P	11 32 30.2			.5		
		ES	Z	35.8			.5		

18 NOV 11 38 19.0 46.4N 151.0E OBS PRELIMINARY EPICENTER -- (5)  
H = 0 KM

18 NOV	S7	EP	Z	11 38 48.1	564.5	.3	1.3	15	3.6
		ES	X	39 11.1			1.3	15	13.3
19 NOV	S11	+IP	Z	11 38 45.7	806.5	.2	1.4	267	.2
		E	Z	39 7.7			1.4	267	
18 NOV	S9	EP	Z	11 38 52.3	1.7U	.2	2.0	316	-1.8
		ES	Y	39 18.7			2.0	316	17.5
		E	P	40 5.1			2.0	316	
18 NOV	S4	EP	Z	11 38 57.5	161.3	.2	2.5	45	-3.5
		E	Y	39 28.2			2.5	45	
18 NOV	S10	-IP	Z	11 39 15.0	604.8	.1	3.8	319	-4.4
		E	Z	15.8			3.8	319	
		E	Z	17.1			3.8	319	
		ES	X	59.6			3.8	319	-0.3

18 NOV	S11	EP	P	14 3 12.2			1.5		*
		ES	Z	31.4			1.5		
18 NOV	S7	E	X	14 3 29.2					*
18 NOV	S9	E	Y	14 3 40.9					*
18 NOV	S10	EP	Z	14 4 22.0	80.6	.1	.2		*
		ES	Y	24.2			.2		

18 NOV	S4	EP	Z	15 15 34.9			.7		
		ES	Y	44.3			.7		
18 NOV	S7	EP	Z	15 15 37.0			1.0		
		ES	X	50.6			1.0		
18 NOV	S11	EP	Z	15 53 44.3	403.2	.2	1.8		
		ES	Z	54 6.4			1.8		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
18 NOV	S7	EP	Z	16 30 15.9			.7		
		ES	X	25.5			.7		
18 NOV	S7	EP	Z	17 6 48.7	443.5	.1	.4		
		ES	X	52.9			.4		
		E	X	7 25.3			.4		
18 NOV	S4	EP	Z	17 7 4.7			1.5		
		ES	Y	23.3			1.5		
18 NOV	S7	EP	Z	19 13 30.0			.2		
		ES	X	32.2			.2		
18 NOV	S7	E	X	19 28 24.9					
18 NOV	S7	E	Z	20 2 23.3					
18 NOV	S7	EP	Z	20 3 49.5	32.1	.1	.5		
		ES	X	57.4			.5		
18 NOV	S7	EP	Z	20 16 45.3			5.3		
		ES	X	17 45.6			5.3		
18 NOV	S10	EP	Z	20 17 12.7	121.0	.3	R		
		ES	Y	18 32.3			R		
18 NOV	S9	E	Z	20 18 14.2					
18 NOV	S7	E	X	21 6 23.6					
18 NOV	S11	EP	Z	21 10 49.0					*
18 NOV	S9	EP	Z	21 11 5.6	161.3	.2	3.0		*
		ES	Y	40.7			3.0		
18 NOV	S7	EP	Z	21 11 20.3			4.5		*
		ES	X	12 12.7			4.5		
18 NOV	S10	E	Z	21 12 9.3					*
18 NOV	S9	E	Z	21 40 21.0					
18 NOV	S4	EP	Z	23 42 28.1	201.6	.2	1.0		
		ES	Y	41.6			1.0		
18 NOV	S11	EP	Z	23 51 10.1	403.2	.3	.5		
		ES	Z	16.2			.5		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
19 NOV	S7	EP	Z	0 9 49.3					
		ES	X	11 0.2			R		
							R		
19 NOV	S7	EP	Z	1 17 25.9	80.6	.2	2.0		
		ES	X	50.0			2.0		
19 NOV	S7	EP	Z	1 22 44.1					
		ES	X	50.3			.5		
		E	X	23 46.3			.5		
							.5		

19 NOV 2 3 24.0 49.0N 153.0E OBS PRELIMINARY EPICENTER -- (5)  
H = 150 KM

19 NOV	S11	EP	Z	2 4 10.3	362.9	.3	2.5		4.7
		E	Z	44.8			2.5		
19 NOV	S9	EP	Z	2 4 26.6	725.8	.2	4.0		1.5
		ES	Y	5 9.1			4.0		-3.0
19 NOV	S7	EP	Z	2 4 26.0			4.2	23	-2.0
		E	X	34.6			4.2	23	
		E	X	46.2			4.2	23	
		ES	X	5 11.8			4.2	23	-5.5
		E	X	29.8			4.2	23	
19 NOV	S4	EP	Z	2 4 46.7	403.2	.2	5.3	34	4.3
		ES	Y	5 49.1			5.3	34	5.9
19 NOV	S10	EP	Z	2 4 46.7	241.9	.2	5.5	349	2.1
		E	Z	47.5			5.5	349	
		E	Z	49.8			5.5	349	
		ES	Y	5 45.4			5.5	349	-1.7
19 NOV	S11	EP	Z	2 44 10.9			.3		
		ES	Z	14.8			.3		
19 NOV	S7	E	Z	3 48 38.7					
19 NOV	S7	EP	Z	4 2 37.4	604.8	.2	.5		
		ES	X	43.4			.5		
19 NOV	S11	EP	P	4 3 3.3					



DAY	STA	PHASE	Z	TIME	AMP	PER	DIST	AZI	RES
19 NOV	4 11	53.0	45.1N	150.7E	OBS PRELIMINARY EPICENTER -- (4)				
					H = 0 KM				
19 NOV	S7	EP	Z	4 12 3.3	645.2	.2	.1	104	2.8
		ES	X	4.8			.1	104	.5
19 NOV	S4	EP	Z	4 12 19.0			1.6	74	-3.1
		ES	Y	39.0			1.6	74	5.6
19 NOV	S9	EP	Z	4 12 20.7	80.6	.2	1.6	274	-2.4
		ES	Y	39.8			1.6	274	5.3
19 NOV	S11	EP	Z	4 12 27.3			2.1	230	-3.0
		E	Z	52.0			2.1	230	
19 NOV	S7	EP	Z	4 34 29.6	121.0	.1	.5		
		ES	X	35.8			.5		
19 NOV	S11	EP	Z	5 9 13.4			.4		
		ES	Z	17.4			.4		
19 NOV	5 19	56.1	37.6N	141.3E	NEAR E CST OF HONSHU, JAPAN				
					H = 67 KM MAG = 5.1				
19 NOV	S4	EP	Z	5 21 58.3	322.6	.3	8.9	220	-5.1
		ES	Y	23 29.4			8.9	220	-14.7
19 NOV	S7	EP	Z	5 22 19.3	96.2	.3	10.2	226	-3.0
		ES	X	24 2.4			10.2	226	-13.8
		E	Z	31 13.2			10.2	226	
19 NOV	S9	EP	Z	5 22 32.1	362.9	.4	11.5	234	-7.2
		E(PP)	Z	43.3			11.5	234	-10.1
		E	Y	24 26.7			11.5	234	
		E	P	32 52.3			11.5	234	
19 NOV	S10	EP	Z	5 22 36.7	322.6	.5	11.8	244	-6.2
		E(PP)	Z	40.4			11.8	244	-16.7
		E	X	24 34.6			11.8	244	
		E	X	33 21.7			11.8	244	
		E	P	44.4			11.8	244	
19 NOV	S11	EP	P	5 22 44.9			12.4	228	-7.0
		E	Z	24 49.9			12.4	228	
19 NOV	S11	EP	Z	5 34 10.4					



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
19 NOV	S11	EP ES	P Z	6 36 15.8 21.3			.5 .5		
19 NOV	7 31	14.0	40.5N	142.7E	NEAR E CST OF HONSHU, JAPAN H = 33 KM MAG = 4.3				
19 NOV	S4	EP ES	Z Y	7 32 38.1 33 39.8	1.3U	.6	6.0	228	-4.2
19 NOV	S7	EP E	Z Z	7 32 59.4 34 18.5	201.6	.5	6.0 7.4	228 234	-10.7 -2.6
19 NOV	S9	E EP	X Z	40 13.6 7 33 14.8	604.8	.5	7.4 8.8	234 243	
		E E	Y Y	28.9 34 45.0			8.8 8.8	243 243	-7.1
19 NOV	S10	E EP	P Z	41 44.7 7 33 23.1	403.2	.5	8.8 9.4	243 255	
		E E	X P	34 58.6 42 40.0			9.4 9.4	255 255	-6.7
19 NOV	S11	EP E	P Z	7 33 25.9 35 4.0			9.4 9.6	255 235	-6.6
19 NOV	S11	EP	P	8 59 48.6					
19 NOV	S9	EP ES	Z Y	9 0 5.5 1 6.0	80.6	.3	5.3 5.3		
19 NOV	S7	E	Z	9 14 15.7					
19 NOV	S11	EP ES	Z Z	9 48 12.7 21.5			.6 .6		
19 NOV	S11	EP ES	P Z	13 8 53.7 9 17.5			1.9 1.9		*
19 NOV	S9	EP ES	Z Y	13 9 1.8 30.7	80.6	.2	2.4 2.4		*
19 NOV	S7	E	X	13 9 24.0					*
19 NOV	S10	E	Z	13 10 10.7					*

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
19 NOV	S11	EP	P	13 20 23.3			3.4		*
		ES	Z	21 3.2			3.4		
19 NOV	S9	EP	Z	13 20 39.3	201.6	.2	4.2		*
		E	Z	48.9			4.2		
		ES	Y	21 28.2			4.2		
19 NOV	S10	EP	Z	13 20 50.6			5.6		*
		ES	Y	21 54.7			5.6		
19 NOV	S7	EP	Z	13 20 55.3	32.1	.1	5.4		*
		ES	X	21 56.5			5.4		
19 NOV	S11	-IP	Z	15 57 43.1	604.8	.2	.5		
		ES	Z	49.7			.5		
19 NOV	S9	EP	Z	15 57 58.3	201.6	.2	1.2		
		FS	Y	58 13.1			1.2		
		E	Z	59 24.9			1.2		
19 NOV	S4	EP	Z	16 32 2.9	201.6	.2	.8		*
		ES	Y	13.7			.8		
		E	Y	33 23.9			.8		
19 NOV	S7	EP	Z	16 32 15.9			1.7		*
		E	X	21.1			1.7		
		ES	X	37.2			1.7		
		E	X	34 5.1			1.7		
19 NOV	S10	EP	Z	16 33 42.2	30.6	.1	.1		*
		ES	X	43.4			.1		
19 NOV	S11	EP	P	16 53 32.4			.5		
		ES	Z	38.0			.5		
19 NOV	S11	EP	P	17 20 41.8			.6		
		ES	Z	50.6			.6		
19 NOV	S9	E	Y	17 21 13.1					
		E	Z	22 34.8					
19 NOV	S11	EP	P	17 32 37.5			.7		
		ES	Z	47.1			.7		
19 NOV	S4	EP	Z	17 44 22.5	201.6	.2	.6		
		ES	Y	31.4			.6		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
19 NOV	S7	EP	Z	17 44 28.3	80.6	.1	1.0		
		ES		41.5			1.0		
19 NOV	S7	IP	Z	17 52 47.1	322.6	.2	.7		*
		ES	X	56.7			.7		
19 NOV	S9	EP	Z	17 52 55.1	362.9	.2	1.1		*
		ES	Y	53 9.5			1.1		
		E	Y	54 15.1			1.1		
19 NOV	S11	EP	P	17 53 .1			1.6		*
		ES	Z	19.4			1.6		
19 NOV	S7	EP	Z	19 22 30.0			.7		
		ES	X	39.7			.7		
19 NOV	S11	EP	Z	20 10 13.6			1.3		*
			Z	29.9			1.3		
19 NOV	S9	EP	Z	20 10 28.7	564.5	.2	2.2		*
		ES	Y	55.6			2.2		
19 NOV	S7	EP	Z	20 10 38.0	201.6	.1	2.8		*
		E	X	44.8			2.8		
		E	X	11 .7			2.8		
		ES	X	11.1			2.8		
19 NOV	S10	EP	Z	20 10 49.4	604.8	.3	3.8		*
		E	Z	51.1			3.8		
		ES	X	11 34.1			3.8		
19 NOV	S4	EP	Z	20 10 52.4			3.9		*
		ES	Y	11 38.3			3.9		
19 NOV	S7	EP	Z	20 56 21.4			3.7		
		ES	X	57 5.0			3.7		
19 NOV	S7	EP	Z	21 38 25.1			1.1		
		ES	X	39.1			1.1		



DAY	STA	PHASE C		TIME			AMP	PER	DIST	AZI	RES
19 NOV	S11	EP	Z	21	53	23.5			2.6		*
		ES	Z			54.0			2.6		*
19 NOV	S9	EP	Z	21	53	39.1	322.6	.2	3.3		*
		ES	Y			54 17.5			3.3		*
		E	Y			57 18.9			3.3		*
19 NOV	S10	EP	Z	21	53	51.8	121.0	.2	4.4		*
		E	X			54 10.2			4.4		*
		ES	Y			43.0			4.4		*
		L	X			58 42.7			4.4		*
19 NOV	S7	EP	Z	21	53	56.2	80.6	.2	4.7		*
		E	X			54 5.8			4.7		*
		ES	X			50.5			4.7		*
19 NOV	S7	EP	Z	22	55	41.8			N		
		E	X			56 41.8			N		
		ES	X			57.1			N		
19 NOV	S9	E	Y	22	57	24.3					
19 NOV	S11	EP	Z	23	12	15.7	201.6	.2	.5		
		ES	Z			21.1			.5		
19 NOV	S11	EP	P	23	37	32.9					
20 NOV	S7	EP	Z	0	22	47.3	322.6	.3	.5		
		E	Z			50.2			.5		
		ES	X			53.9			.5		
20 NOV	S7	EP	Z	0	36	3.3	80.6	.2	1.7		
		ES	X			24.4			1.7		
20 NOV	S9	E	Y	0	36	50.0					
20 NOV	S11	EP	Z	1	0	22.8	999.9		L		*
20 NOV	S9	EP	Z	1	0	40.6	282.3	.2	1.5		*
		FS	Y			59.6			1.5		*
		E	Z			1 57.2			1.5		*
20 NOV	S7	EP	Z	1	0	54.0			2.3		*
		E	X			1 10.2			2.3		*
		ES	X			21.1			2.3		*
20 NOV	S10	EP	Z	1	1	2.2			3.1		*
		ES	X			78.3			3.1		*



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
20 NOV	S10	EP	Z	2 17 40.8			.2		
		ES	Y	42.9			.2		
20 NOV	S4	EP	Z	2 25 17.7	121.0	.2	.8		*
		ES	Y	28.7			.8		
20 NOV	S7	EP	Z	2 25 19.4	403.2	.2	.9		*
		ES	X	31.6			.9		
20 NOV	S9	EP	Z	2 25 40.1	241.9	.3	2.3		*
		ES	Y	26 7.1			2.3		
		E	Y	27 21.7			2.3		
20 NOV	S11	EP	P	2 25 45.6			2.8		*
		ES	Z	26 18.4			2.8		
20 NOV	S7	EP	Z	2 48 46.8	1.7U	.2			*
20 NOV	S9	EP	Z	2 49 7.9	483.9	.2	2.1		*
		E	Z	15.9			2.1		
		ES	Y	32.7			2.1		
20 NOV	S11	EP	P	2 49 12.9			2.8		*
		ES	Z	46.2			2.8		
20 NOV	S10	EP	Z	2 49 26.6			3.5		*
		ES	X	50 7.5			3.5		
		E	Y	53 18.2			3.5		
20 NOV	S11	EP	P	3 29 28.1			1.1		
		ES	Z	42.0			1.1		
20 NOV	S4	EP	Z	3 49 48.2	201.6	.2	.8		
		ES	Y	59.6			.8		
20 NOV	S4	EP	Z	4 8 33.0	161.3	.1	1.3		*
		ES	Y	49.1			1.3		
20 NOV	S7	EP	Z	4 8 43.3			2.0		*
		ES	X	9 7.8			2.0		
20 NOV	S9	EP	Z	4 9 1.8	201.6	.2	3.1		*
		E	Z	9.9			3.1		
		ES	Y	38.6			3.1		
20 NOV	S10	EP	Z	4 9 21.5	161.3	.2	4.6		*
		ES	X	10 14.6			4.6		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
20 NOV	S11	EP	P	4 58 14.0			.7		
		ES	Z	23.9			.7		
20 NOV	S9	EP	Z	4 58 28.6	80.6	.2	1.3		
		ES	Y	44.9			1.3		
		E	Z	59 58.8			1.3		
20 NOV	S9	EP	Z	5 7 25.9	80.6	.2	2.5		
		ES	Y	55.3			2.5		
20 NOV	S11	EP	P	9 6 20.5					
20 NOV	S9	EP	Z	9 6 37.1	403.2	.2	R		
		ES	Y	8 3.0			R		
20 NOV	S11	EP	P	10 50 53.5			.8		
		ES	Z	51 4.7			.8		
20 NOV	S9	EP	Z	10 51 12.2	121.0	.2	1.9		
		ES	Y	35.3			1.9		
20 NOV	S7	EP	Z	11 33 15.0	201.6	.3	3.5		*
		ES	X	56.0			3.5		
20 NOV	S9	EP	Z	11 33 34.0	201.6	.2	4.7		*
		E	Z	41.7			4.7		
		ES	Y	34 28.1			4.7		
20 NOV	S11	EP	P	11 33 38.6					*
20 NOV	S10	EP	Z	11 33 50.5					*
20 NOV	S11	EP	P	11 42 20.2			.5		
		ES	Z	26.1			.5		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
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20 NOV 12 29 14.0 45.6N 151.3E OBS PRELIMINARY EPICENTER -- (5)  
H = 0 KM

20 NOV	S7	EP	Z	12 29 30.2	999.9		.7	50	-.9
		E	X	36 10.3			.7	50	
20 NOV	S9	-IP	Z	12 29 38.2	1.00	.2	1.3	297	-1.7
		E	Z	54.4			1.3	297	
20 NOV	S11	EP	P	12 29 41.6			1.5	233	-.4
		E	Z	30 2.4			1.5	233	
20 NOV	S4	EP	Z	12 29 47.9	161.3	.3	2.2	64	-4.2
		ES	Y	30 11.3			2.2	64	13.6
20 NOV	S10	+IP	Z	12 30 1.2	443.5	.3	3.1	311	-3.3
		ES	X	35.8			3.1	311	13.0
		E	P	33 21.5			3.1	311	

20 NOV 14 6 54.0 45.3N 151.9E OBS PRELIMINARY EPICENTER -- (4)  
H = 50 KM

20 NOV	S9	EP	Z	14 7 9.6	645.2	.2	.8	291	-.5
		ES	Y	21.4			.8	291	.3
		E	Y	8 10.1			.8	291	
20 NOV	S7	EP	Z	14 7 11.5			1.0	80	-.6
20 NOV	S11	EP	P	14 7 18.1			1.4	213	-.1
		E	Z	36.6			1.4	213	
20 NOV	S10	EP	Z	14 7 32.4	201.6	.2	2.5	312	-1.5
		E	Z	39.3			2.5	312	
		ES	Y	8 2.9			2.5	312	-1.2
		E	Y	10 58.0			2.5	312	

20 NOV	S9	EP	Z	14 30 41.1	282.3	.2	1.0		
		ES	Y	53.7			1.0		
		E	Y	31 49.4			1.0		

20 NOV	S7	EP	Z	14 30 42.1	403.2	.3	1.1		
		ES	X	56.2			1.1		

20 NOV	S4	EP	Z	15 25 26.5			1.9		
		ES	Y	49.7			1.9		

20 NOV	S10	EP	Z	15 27 18.2	80.6	.1	.3		
		ES	Y	21.8			.3		

20 NOV	S11	EP	Z	16 40 12.7			.6		
		ES	Z	21.4			.6		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
20 NOV	S11	EP	Z	17 17 20.2			1.6		
		ES	Z	39.7			1.6		
20 NOV	S10	EP	Z	17 17 55.2			4.2		
		ES	X	18 44.0			4.2		
20 NOV	S7	EP	Z	17 31 8.7			R		*
		ES	X	32 55.9			R		
20 NOV	S10	EP	Z	17 31 13.5			1.8		*
		ES	X	35.6			1.8		
		E	Y	33 24.9			1.8		
20 NOV	S9	EP	Z	17 31 21.4			R		*
		ES	Y	33 12.7			R		
20 NOV	S7	EP	Z	17 39 49.3			R		
		ES	X	41 23.4			R		
20 NOV	S11	EP	Z	17 52 5.1			.3		
		ES	Z	9.0			.3		
20 NOV	S11	EP	Z	18 56 31.5	282.3	.2	3.2		
		ES	Z	57 9.6			3.2		
20 NOV	S4	EP	Z	19 13 52.2	604.8	.3	.6		*
		ES	Y	14 .5			.6		
20 NOV	S7	EP	Z	19 14 3.8					*
		ES	X	21.9					
20 NOV	S9	EP	Z	19 14 22.1	887.1	.3	2.5		*
		ES	Y	51.5			2.5		
		E	Z	17 15.2			2.5		
20 NOV	S10	EP	Z	19 14 37.7	80.6	.1	3.7		*
		ES	X	15 20.6			3.7		
		E	X	19 7.0			3.7		
20 NOV	S7	E	X	19 25 40.9					



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
20 NOV	S4	EP	Z	19 27 4.1	80.6	.2	.9		*
		ES	Y	16.0			.9		
20 NOV	S7	EP	Z	19 27 24.4			2.1		*
		ES	X	50.1			2.1		
20 NOV	S9	EP	P	19 27 42.3			3.3		*
		ES	Y	28 21.5			3.3		
20 NOV	S10	EP	Z	19 28 46.2			.3		*
		ES	Y	49.9			.3		
20 NOV	S11	EP	Z	20 6 19.4			.5		
		ES	Z	24.8			.5		
20 NOV	S7	EP	Z	20 40 11.3			1.7		
		ES	X	32.4			1.7		
20 NOV	S11	+IP	Z	21 4 .8	403.2	.2	.4		
		ES	Z	5.3			.4		
20 NOV	S7	EP	Z	22 1 16.1	999.9		.4		
		ES	X	21.3			.4		
20 NOV	S11	EP	P	22 1 44.9			2.2		
		ES	Z	2 11.2			2.2		
20 NOV	S7	EP	Z	23 7 49.2			3.8		
		ES	X	8 33.3			3.8		

20 NOV 23 10 51.0 44.0N 151.1E OBS PRELIMINARY EPICENTER -- (4)  
H = 50 KM

20 NOV	S7	EP	Z	23 11 11.1	80.6	.2	1.2	160	-1.1
		ES	X	27.7			1.2	160	
		E	X	12 54.9			1.2	160	
20 NOV	S9	EP	Z	23 11 17.5	201.6	.3	1.7	234	-1.3
		ES	Y	40.5			1.7	234	1.3
20 NOV	S10	EP	Z	23 11 29.3			2.5	279	-1.6
		ES	Y	52.5			2.5	279	-8.6
		E	Y	14 19.8			2.5	279	
20 NOV	S11	EP	P	23 11 32.9			2.8	209	-2.1
		E	Z	12 11.2			2.8	209	

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
20 NOV	S9	E	Z	23 13 47.9	322.6	.2			
		E	Y	15 15.4					
20 NOV	S7	EP	Z	23 52 58.5	80.6	.1	1.2		
		ES	X	53 13.3			1.2		
21 NOV	S11	EP	P	0 31 30.3			.6		
		ES	Z	38.6			.6		
21 NOV	S7	EP	Z	1 6 25.5	241.9	.2	.5		
		E	Z	28.7			.5		
		ES	X	32.4			.5		
21 NOV	S9	EP	Z	1 27 14.4	241.9	.2	2.3		
		ES	Y	41.5			2.3		
21 NOV	S7	EP	Z	1 47 5.5			1.8		
		ES	X	27.1			1.8		
21 NOV	S11	EP	P	1 47 10.4			2.2		
		ES	Z	36.7			2.2		

21 NOV 2 16 39.0 44.3N 149.0E OBS PRELIMINARY EPICENTER -- (5)  
H = 0 KM

21 NOV	S4	EP	Z	2 16 49.0	403.2	.3	.5	136	-4.4
		ES	Y	59.7			.5	136	1.2
21 NOV	S7	EP	Z	2 17 6.5	524.2	.3	1.4	233	1.3
		ES	X	28.9			1.4	233	10.9
21 NOV	S9	EP	Z	2 17 25.3	282.3	.2	2.9	258	-2.5
		ES	Y	18 2.0			2.9	258	19.2
21 NOV	S11	EP	Z	2 17 31.8			3.6	233	-5.0
		E	Z	18 15.8			3.6	233	
21 NOV	S10	EP	Z	2 17 41.5	80.6	.1	4.1	281	-2.6
		ES	Y	18 32.2			4.1	281	-1.8
		E	Y	22 13.5			4.1	281	
21 NOV	S7	EP	Z	2 25 8.2	201.6	.1	.4		
		E	Z	11.4			.4		
		ES	X	12.9			.4		
21 NOV	S11	EP	P	3 53 40.7			1.2		
		ES	Z	55.5			1.2		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
21 NOV	S9	EP	Z	4 16 26.4	121.0	.3	4.1		
		ES	Y	17 14.3			4.1		
21 NOV	S11	EP	P	4 59 24.9			.5		
		ES	Z	31.6			.5		
21 NOV	S7	E	Z	5 14 2.4					
21 NOV	S7	EP	Z	5 15 5.4	80.6	.1	.5		
		ES	X	11.9			.5		
21 NOV	S7	EP	Z	5 17 16.6			.8		
		ES	X	27.2			.8		
21 NOV	S7	EP	Z	5 18 9.6			.5		
		ES	X	15.5			.5		
21 NOV	S7	EP	Z	7 0 44.6			.7		
		ES	X	53.9			.7		
21 NOV	S11	EP	P	7 2 15.1			1.0		
		ES	Z	27.8			1.0		
21 NOV	S7	EP	Z	7 11 5.4			.5		
		ES	X	11.7			.5		
21 NOV	S7	E	Z	8 57 53.7					
21 NOV	S11	EP	P	9 28 9.7			.8		
		ES	Z	20.4			.8		

21 NOV 9 34 28.0 43.8N 148.7E OBS PRELIMINARY EPICENTER -- (5)  
H = 0 KM

21 NOV	S4	+IP	Z	9 34 43.1	604.5	.3	.9	170	-4.5
		ES	Y	51.7			.9	170	-8.5
21 NOV	S7	EP	Z	9 35 1.6	80.6	.1	1.9	225	.2
		ES	X	9.9			1.9	225	.3
		E	X	23.0			1.9	225	
21 NOV	S9	EP	Z	9 35 19.4	322.6	.3	3.3	250	-2.6
		E	Z	28.5			3.3	250	
		ES	Y	52.8			3.3	250	5.0
		E	Y	38 42.4			3.3	250	
21 NOV	S11	EP	P	9 35 29.0			4.1	230	-3.8
21 NOV	S10	EP	Z	9 35 33.7	80.6	.1	4.3	274	-2.0
		ES	Y	36 19.8			4.3	274	-8.5
		E	Y	40 16.5			4.3	274	



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
21NOV	S7	EP	Z	10 36 44.1			5.0		
		ES	X	37 41.7			5.0		
21NOV	S9	EP	Z	10 37 56.7	121.0	.3	1.0		
		ES	Y	38 9.8			1.0		
21NOV	S7	EP	Z	11 17 45.4			.4		
		ES	X	50.4			.4		
21NOV	S4	EP	Z	12 12 29.2	201.6	.2	.5		*
		ES	Y	35.9			.5		
21NOV	S7	EP	Z	12 12 45.0	201.6	.1	1.2		*
		ES	X	13 .6			1.2		
21NOV	S9	EP	Z	12 13 3.2	161.3	.3	1.7		*
		ES	Y	24.1			1.7		
21NOV	S11	EP	P	12 13 13.5					*
21NOV 12 19 27.3 46.7N 152.5E KURILE IS H = 40 KM MAG = 5.6									
21NOV	S11	-IP	Z	12 19 39.7	999.9		.4	300	2.9
21NOV	S9	EP	Z	12 19 54.6	999.9		1.7	349	-1.0
21NOV	S7	EP	Z	12 20 4.6	999.9		2.1	41	4.0
		E	X	9.5			2.1	41	
21NOV	S10	EP	Z	12 20 16.9	999.9		3.4	335	-2.4
		E	Z	51.3			3.4	335	
21NOV	S4	FP	Z	12 20 22.4	999.9		3.5	53	2.3
21NOV	S11	EP	Z	12 31 27.0	241.9	.2	.5		
		ES	Z	32.3			.5		
21NOV	S11	EP	Z	1. 45 23.0			1.5		
		ES	Z	42.0			1.5		
21NOV	S11	EP	P	13 6 11.0			.5		
		ES	Z	17.7			.5		
21NOV	S11	EP	P	13 33 21.2					
21NOV	S9	EP	Z	13 53 59.8	322.6	.2	R		
		ES	Y	55 34.0			R		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
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21NOV 15 20 21.0 46.2N 152.9E OBS PRELIMINARY EPICENTER -- (4)  
H = 0 KM

21NOV	S11	-IP	Z	15 20 27.6	1.2U	.1	.3	193	-3.4
21NOV	S9	EP	Z	15 20 42.4	322.6	.2	1.2	357	-2.5
		ES	Y	58.3			1.2	357	-.6
		E	Y	22 4.1			1.2	357	
21NOV	S7	EP	Z	15 20 53.2	241.9	.3	2.0	57	-2.9
		ES	X	21 17.7			2.0	57	14.5
21NOV	S10	EP	Z	15 21 5.3			2.8	336	-2.9
		ES	X	41.7			2.8	336	21.4
		E	X	14 12.2			2.8	336	

21NOV	S11	EP	Z	16 30 30.3			4.8		
		ES	Z	31 25.6			4.8		

21NOV 17 1 58.0 44.4N 149.6E OBS PRELIMINARY EPICENTER -- (4)  
H = 110 KM

21NOV	S7	EP	Z	17 2 18.5	564.5	.3	1.0	222	-.8
		ES	X	39.0			1.0	222	3.5
		E	X	5 20.6			1.0	222	
		E	X	6 7.4			1.0	222	
21NOV	S9	EP	Z	17 2 36.8	403.2	.3	2.5	257	-1.3
		E	Z	39.8			2.5	257	
		ES	Y	3 7.3			2.5	257	-1.2
21NOV	S11	EP	P	17 2 45.5			3.2	230	-2.0
		E	Z	3 29.5			3.2	230	
21NOV	S10	EP	Z	17 2 52.0			3.7	284	-2.1
		E	Z	3 2.0			3.7	284	
		ES	Y	36.5			3.7	284	-.2
		E	Y	7 9.7			3.7	284	
		E	Y	21.8			3.7	284	

21NOV	S11	EP	Z	17 22 1.0	362.9	.2	.5		
		ES	Z	6.7			.5		
21NOV	S10	E	Z	17 23 13.9					
21NOV	S11	EP	Z	17 34 16.0			.6		
		ES	Z	24.4			.6		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
21 NOV	S11	EP	Z	17 47 48.0			.5		*
		ES	Z	53.5			.5		
21 NOV	S9	E	Y	17 48 20.2					*
		E	Z	49 18.2					
21 NOV	S10	EP	Z	17 49 59.0			.2		*
		ES	X	50 .9			.2		
21 NOV	S7	E	Z	18 38 48.9					
21 NOV	S7	EP	Z	18 51 56.5			1.7		
		ES	X	52 17.3			1.7		
21 NOV 19 18 31.7 36.3N 137.4E HONSHU, JAPAN H = 252 KM MAG = 4.3									
21 NOV	S7	EP	Z	19 21 33.3	241.9	.4	13.3	233	1.1
		ES	X	23 59.3			13.3	233	4.4
21 NOV	S9	EP	Z	19 21 50.6	322.6	.4	14.7	239	1.4
		ES	Y	24 22.0			14.7	239	-3.7
21 NOV	S10	EP	Z	19 22 .0			15.1	247	6.1
		E	X	11.6			15.1	247	
		ES	Y	24 35.3			15.1	247	.8
21 NOV	S11	EP	Z	20 2 47.4			.5		
		ES	Z	53.3			.5		
21 NOV	S7	EP	Z	21 46 21.3			1.6		
		ES	X	41.5			1.6		
21 NOV	S7	EP	Z	22 10 1.9			.8		
		E	X	5.5			.8		
		ES	X	13.3			.8		
21 NOV	S9	E	Z	22 54 31.3					
		E	Y	56 19.7					
		E	Y	23 3 47.7					
21 NOV	S7	EP	Z	23 3 22.0			.6		
		ES	X	31.0			.6		
		E	X	5 25.3			.6		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
22 NOV	S11	EP	Z	0 6 31.3			.4		*
		ES	Z	36.2			.4		
22 NOV	S9	EP	Z	0 6 46.0	201.6	.2	1.1		*
		ES	Y	7 .6			1.1		
		E	Z	59.4			1.1		
22 NOV	S7	EP	Z	0 6 50.7			2.9		*
		ES	X	7 24.6			2.9		
22 NOV	S7	EP	Z	1 18 51.5			.5		
		ES	X	58.3			.5		
22 NOV	S7	EP	Z	5 32 9.7			1.1		
		ES	X	24.2			1.1		
22 NOV	S7	EP	Z	6 12 20.5			.8		
		ES	X	31.5			.8		
22 NOV	6 29 53.5	3.2N	146.7E	SEA OF OKHOTSK					
				H = 453 KM			MAG = 5.6		
22 NOV	S7	EP	Z	6 31 6.7			4.0	321	-2.9
22 NOV	S9	EP	Z	6 31 17.6	999.9		5.4	309	-4.9
		E	P	32 21.1			5.4	309	
22 NOV	S10	EP	Z	6 31 37.6	999.9		7.1	312	-3.2
		ES	X	32 59.8			7.1	312	-5.8
22 NOV	S7	EP	Z	6 55 29.3			.5		
		ES	X	35.9			.5		
22 NOV	S7	EP	Z	8 2 15.1			N		
		E	X	31.6			N		
		ES	X	3 29.2			N		
22 NOV	S9	EP	Z	8 2 32.4	80.6	.3	R		
		ES	Y	3 56.7			R		
22 NOV	S7	EP	Z	9 9 11.7			.9		
		ES	X	23.4			.9		
		E	X	10 23.6			.9		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
22 NOV	S7	EP	Z	9 11 59.0					
		ES	X	12 11.5			.9		
							.9		
22 NOV	S7	EP	Z	10 5 46.6					
		ES	X	55.6			.6		
							.6		
22 NOV	S7	E	X	10 6 53.6					
22 NOV	S7	EP	Z	12 17 51.8					
		ES	X	58.1			.5		
							.5		
22 NOV	S7	EP	Z	12 44 51.0					
		E	X	45 4.9			R		
		E	X	46 10.5			R		
		ES	X	26.6			R		
		E	Z	47 42.0			R		
22 NOV	S9	EP	Z	12 46 14.8	121.0	.2			
		ES	Y	41.1			2.2		
							2.2		
22 NOV	S9	EP	Z	12 50 31.8	362.9	.3			
		ES	Y	46.8			1.2		*
		E	Y	51 41.7			1.2		
22 NOV	S7	EP	Z	12 50 44.6	80.6	.1			
		E	Z	46.3			1.2		*
		ES	X	51 12.7			2.3		
22 NOV	S10	EP	Z	12 50 54.0			2.3		
		ES	X	51 27.6			2.3		*
		E	Y	53 59.2			2.8		
							2.8		
22 NOV	S9	EP	Z	13 46 14.6	403.2	.2			
		ES	Y	47.5			2.8		*
22 NOV	S7	EP	Z	13 46 17.4			2.8		
		ES	X	23.2			.5		*
		E	X	33.0			.5		
22 NOV	S10	EP	Z	13 46 35.5	362.9	.2			
		ES	Y	47 25.4			.5		*
							4.3		
							4.3		
22 NOV	S9	E	Y	16 0 48.7					
22 NOV	S7	EP	Z	16 14 38.1					
		ES	X	52.6			1.1		
							1.1		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
22 NOV	S7	EP	X	17 9 40.7			2.3		
		E	X	10 5.4			2.5		
		ES	X	18.4			2.5		
		E	X	12 44.5			2.5		
22 NOV	S9	EP	Z	18 26 52.6	161.3	.2	1.9		
		ES	Y	27 16.3			1.9		
22 NOV	S9	E	Y	19 3 23.5					
22 NOV	S7	EP	Z	21 44 30.7	121.0	.3	1.6		
		ES	X	50.8			1.6		
		E	X	46 49.4			1.6		
22 NOV	S9	E	Y	21 44 55.7					
		E	Y	46 2.8					
22 NOV	S7	EP	Z	22 6 56.7	645.2	.4			
22 NOV	S7	EP	Z	22 11 56.0			1.7		
		ES	X	12 17.3			1.7		
22 NOV	S7	EP	Z	23 20 .8			.9		
		ES	X	13.3			.9		
23 NOV	S7	EP	Z	4 0 32.7			4.4		
		E	X	40.7			4.4		
		ES	X	1 23.1			4.4		
		E	X	38.2			4.4		
23 NOV	S10	EP	Z	9 26 6.3			2.4		
		E	Y	17.0			2.4		
		ES	X	35.4			2.4		
		E	X	28 57.1			2.4		
23 NOV	S10	EP	Z	19 5 6.8	80.6	.2	R		
		ES	X	6 29.3			R		
24 NOV	S10	EP	Z	2 58 49.6	604.8	.1	4.6		
		ES	Y	59 42.5			4.6		
24 NOV	S7A	EP	Z	12 12 43.3			1.3		
		FS	X	59.8			1.3		
24 NOV	S10	EP	Z	13 10 51.9			1.9		
		ES	Y	11 14.8			1.9		
24 NOV	S7A	EP	P	13 10 52.4			1.8		
		ES	X	11 14.1			1.8		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
24NOV	S10	EP	Z	14 11 9.8			3.1		
		ES	X	45.9			3.1		
24NOV	S7A	EP	Z	14 11 41.3			2.3		
		ES	X	12 8.3			2.3		
24NOV	S7A	EP	Z	16 14 20.6			.5		
		ES	Z	28.2			.5		
24NOV	S7A	EP	Z	17 17 .6	121.0	.1	.5		
		ES	X	8.6			.5		
24NOV	S7A	EP	Z	18 26 17.9	322.6	.2	1.9		
		ES	X	40.8			1.9		
24NOV	S10	E	Z	18 26 46.9	362.9	.2	4.1		
		E	Z	54.7			4.1		
		ES	Y	27 34.5			4.1		
24NOV	S7A	EP	Z	18 49 6.5			1.7		
		ES	X	27.2			1.7		
24NOV	S10	EP	Z	18 50 31.8			3.2		
		ES	Y	51 9.9			3.2		
24NOV	S7A	EP	Z	18 52 31.1	999.9		2.6		
		ES	Z	53 2.0			2.6		
24NOV	S10	EP	Z	18 53 12.7	999.9		5.4		
		ES	Y	54 15.7			5.4		
24NOV	S10	E	X	19 21 52.1					

24NOV 20 9 8.0 43.8N 145.7E HOKKAIDO, JAPAN REGION  
H = 124 KM MAG = 4.7

24NOV	S7A	EP	Z	20 9 59.0	483.9	.4	3.4	244	-1.7
		E	Z	10 36.1			3.4	244	
24NOV	S10	-1P	Z	20 10 37.6	403.2	.2	6.4	275	-4.0
		ES	Y	11 40.0			6.4	275	-14.4

25NOV	S4A	EP	Z	0 45 47.9	161.3	.1	.5		
		ES	X	55.9			.5		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
25 NOV	S4A	EP	Z	1 28 21.2	80.6	.2	3.2		
		ES	X	58.8			3.2		
25 NOV	S4A	EP	Z	1 43 22.4	201.6	.1	.9		
		ES	Y	34.5			.9		
25 NOV	S4A	EP	Z	3 31 2.3	121.0	.2	.8		
		ES	X	13.2			.8		
25 NOV	S4A	EP	Z	4 3 23.2	161.3	.2	1.7		
		ES	X	43.9			1.7		
25 NOV	S7A	EP	Z	4 3 40.1			3.0		
		ES	X	4 15.3			3.0		
25 NOV	S4A	EP	Z	5 22 56.8			1.8		
		E	X	58.0			1.8		
		ES	X	23 19.3			1.8		
25 NOV	S10	EP	Z	5 23 47.8			5.4		
		E	Z	57.8			5.4		
		ES	Y	24 49.1			5.4		
25 NOV	S7A	EP	Z	5 53 14.1			3.2		
		ES	Y	51.5			3.2		
25 NOV	S4A	EP	Z	6 2 40.2			.7		
		ES	X	50.2			.7		
25 NOV	S7A	EP	Z	7 34 39.6	725.8	.3	1.3		*
		ES	X	56.1			1.3		
25 NOV	S4A	EP	Z	7 34 43.0	161.3	.3	1.4		*
		ES	Y	35 .6			1.4		
25 NOV	S10	EP	Z	7 35 1.0			2.7		*
		ES	X	32.6			2.7		
25 NOV	S10	E	Y	8 42 7.2					
25 NOV	S10	EP	Z	11 10 46.9	80.6	.2	1.4		
		ES	X	11 4.2			1.4		
25 NOV	S7A	EP	Z	11 48 54.6	121.0	.1	1.5		
		ES	Y	49 13.5			1.5		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
25 NOV	S10	EP	Z	13 6 25.5			3.6		
		ES	Y	7 8.1			3.6		
		E	Y	8 57.1			3.6		
25 NOV	S4A	EP	Z	13 59 9.9	282.3	.2	.5		
		ES	Y	16.7			.5		
25 NOV	S7A	EP	P	13 59 18.2			1.1		
		ES	Y	32.3			1.1		
25 NOV	S4A	EP	Z	19 33 7.3	999.9		L		*
25 NOV	S7A	EP	Z	19 33 16.2	999.9		1.7		*
		ES	Z	37.6			1.7		
25 NOV	S10	EP	Z	19 33 59.1	403.2	.4	4.5		*
		ES	X	34 50.9			4.5		
25 NOV	S4A	EP	Z	19 47 44.5	64.1	.2	1.8		
		ES	Y	48 6.5			1.8		
26 NOV	S3A	EP	Z	3 31 45.5	282.3	.2	.9		
		ES	X	57.1			.9		
26 NOV	S3A	E	Y	5 18 38.9					
26 NOV	S3A	EP	Z	5 27 30.5	161.3	.3	.9		
		ES	X	42.8			.9		
		E	X	29 13.4			.9		
26 NOV	S10	EP	Z	5 28 12.9			R		
		ES	Y	30 44.5			R		
26 NOV	S3A	EP	Z	5 36 12.5	564.5	.2	1.8		*
		ES	Z	34.8			1.8		
		F	Z	42 49.5			1.8		
26 NOV	S4A	EP	Z	5 36 27.5	241.9	.2	3.0		*
		F	Z	29.3			3.0		
		ES	X	37 2.8			3.0		
26 NOV	S7A	EP	Z	5 36 44.2	403.2	.2	4.2		*
		ES	Y	37 32.7			4.2		
26 NOV	S10	EP	Z	5 37 13.5			R		*
		ES	X	38 29.8			R		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
26 NOV	S3A	E	Z	6 35 56.4	161.3	.2			
26 NOV	S3A	E	Z	7 3 8.6	483.9	.3			
26 NOV	S3A	EP	Z	7 40 59.0			R		
		ES	X	42 32.2			R		
26 NOV	S3A	EP	Z	8 56 44.4	161.3	.1	R		
		ES	X	57 56.7			R		
26 NOV	S4A	EP	Z	8 56 58.2	80.6	.2	4.1		
		ES	X	57 46.2			4.1		
26 NOV	S4A	EP	Z	9 15 4.0	241.9	.2	.6		
		ES	X	12.3			.6		
26 NOV	S4A	EP	Z	9 42 56.8	80.6	.3	.8		
		ES	X	43 7.3			.8		
26 NOV	S4A	EP	Z	9 44 .5			3.7		
		ES	X	43.9			3.7		
26 NOV	S3A	E	P	10 59 54.0					
26 NOV	S3A	E	Z	11 37 15.1					
26 NOV	S3A	EP	Z	11 42 7.4			1.3		
		ES	X	24.3			1.3		
26 NOV	S3A	E	Z	13 32 29.0					
26 NOV	S3A	E	P	13 42 29.0					
26 NOV	S3A	EP	Z	14 33 33.8			.5		
		ES	X	41.8			.5		

26 NOV 17 5 8.0 42.7N 144.5E HOKKAIDO, JAPAN REGION  
H = 54 KM MAG = 3.9

26 NOV	S3A	EP	Z	17 5 45.2	524.2	.3	2.3	248	.5
		ES	X	6 12.3			2.3	248	.0
26 NOV	S4A	EP	Z	17 6 1.0	241.9	.2	3.5	237	-.9
		E	Z	4.3			3.5	237	
		E	Y	16.6			3.5	237	
		ES	Y	37.6			3.5	237	-5.3
26 NOV	S10	EP	Z	17 6 51.9			7.4	266	-4.4
		ES	Y	8 6.6			7.4	266	-13.6

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
26 NOV	S7A	EP	Z	17 10 18.4	161.3	.2	4.3		
		ES	Y	11 8.2			4.3		
26 NOV	S3A	EP	Z	17 22 8.1			R		
		ES	X	25 .8			R		
26 NOV	S7A	EP	Z	18 31 39.8	443.5	.1	.5		*
		ES	X	47.1			.5		
26 NOV	S4A	EP	Z	18 31 54.6	161.3	.2	1.4		*
		ES	X	32 12.0			1.4		
26 NOV	S3A	EP	Z	18 32 17.8			3.8		*
		ES	X	33 1.8			3.8		
26 NOV	S3A	EP	Z	18 37 35.7			3.7		
		ES	X	38 18.9			3.7		
26 NOV	S7A	EP	Z	18 48 40.2	564.5	.2	.5		
		ES	X	47.5			.5		
26 NOV	S3A	EP	Z	19 4 30.0			4.2		
		ES	X	5 18.8			4.2		
26 NOV	S10	EP	Z	20 1 12.9	80.6	.2	2.0		
		ES	Y	36.9			2.0		
26 NOV	S3A	EP	Z	20 1 37.1			3.6		
		ES	X	2 19.4			3.6		
26 NOV	S3A	E	Z	20 24 29.7	443.5	.3			
26 NOV	S3A	EP	Z	20 39 38.7			3.9		
		ES	X	40 24.2			3.9		
26 NOV	S3A	EP	Z	21 2 15.3			3.2		
		ES	X	53.4			3.2		
27 NOV	S3A	EP	Z	0 3 9.9			R		
		ES	X	4 58.1			R		
27 NOV	S10	EP	Z	0 6 31.9			.6		
		ES	X	40.8			.6		
27 NOV	S7A	EP	Z	0 20 56.0			.8		
		ES	X	21 07.1			.8		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
27 NOV	S4A	EP	Z	0 20 58.5	121.0	.2	1.2		
		ES	X	21 13.4			1.2		
27 NOV	S10	EP	Z	0 22 47.9			R		
		ES	Y	24 18.7			R		
27 NOV	S3A	EP	Z	2 13 42.3			1.7		
		ES	X	14 3.4			1.7		
27 NOV	S4A	EP	Z	2 13 54.4	80.6	.2	2.1		
		ES	X	14 20.3			2.1		
27 NOV	S7A	EP	Z	2 41 9.1			.5		*
		ES	X	15.6			.5		
27 NOV	S4A	EP	Z	2 41 21.4	80.6	.2	1.1		*
		ES	X	36.1			1.1		
27 NOV	S10	EP	Z	2 42 55.9			R		*
		ES	Y	44 20.7			R		
27 NOV	S3A	EP	Z	4 52 51.4	161.3	.3	.5		
		ES	X	58.8			.5		
27 NOV	S7A	EP	Z	5 27 4.0	322.6	.2	4.1		
		ES	X	51.2			4.1		
27 NOV	S4A	EP	Z	5 27 18.7	161.3	.2	1.5		
		ES	X	37.9			1.5		
27 NOV	S7A	EP	Z	6 27 57.3			1.9		
		ES	Y	28 20.8			1.9		
27 NOV	S7A	EP	Z	7 10 20.5			R		
		ES	X	11 29.9			R		
27 NOV	S7A	EP	Z	8 29 43.2			1.5		
		ES	Y	30 1.6			1.5		
27 NOV	S7A	E	Z	9 4 15.4					
27 NOV	S4A	EP	Z	9 4 22.8	80.6	.2	2.4		
		ES	X	51.5			2.4		
27 NOV	S4A	EP	Z	9 15 17.2	282.3	.2	.5		
		ES	Y	24.0			.5		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
27 NOV	11	1	10.0	49.5N 155.8E	KURILE IS				
					H = 40 KM		MAG = 4.9		
27 NOV	S7A	EP	Z	11 2 36.2	201.6	.3	5.8	42	1.1
		E	Z	3 49.2			5.8	42	
27 NOV	S10	EP	Z	11 2 32.9	483.9	.3	5.9	8	-4.6
		E	Z	34.7			5.9	8	
		ES	Y	3 34.4			5.9	8	-10.7
		E	Y	6 47.7			5.9	8	
27 NOV	S4A	EP	Z	11 2 51.3	322.6	.3	6.9	44	.1
		E	Z	52.4			6.9	44	
		ES	X	4 7.0			6.9	44	-2.5
27 NOV	S3A	EP	Z	11 3 9.8	322.6	.2	8.3	42	.4
		E	X	16.7			8.3	42	
		ES	X	4 43.5			8.3	42	.4
27 NOV	S1A	E	Z	11 3 20.6	241.9	.2	8.3	41	
		ES	X	4 58.4			8.3	41	15.4
		E	X	6 6.3			8.3	41	
27 NOV	12	48	2.0	48.1N 155.0E	KURILE IS				
					H = 28 KM		MAG = 4.5		
27 NOV	S7A	EP	Z	12 49 10.0	846.8	.5	4.4	50	.8
		E	Z	50 2.9			4.4	50	
		E	X	53 16.3			4.4	50	
		E	X	32.4			4.4	50	
27 NOV	S10	EP	Z	12 49 5.1	322.6	.2	4.5	4	-4.6
		F	Z	7.2			4.5	4	
		ES	Y	52.0			4.5	4	-10.0
		E	X	53 37.6			4.5	4	
27 NOV	S4A	EP	Z	12 49 25.9	999.9		5.6	51	
		ES	Y	50 27.0			5.6	51	-3.7
27 NOV	S3A	EP	Z	12 49 43.7	604.8	.2	6.9	47	.8
		E	Z	46.3			6.9	47	
		ES	Z	51 4.9			6.9	47	1.2
27 NOV	S1A	EP	Z	12 49 54.4	282.3	.3	7.7	48	-1.1
		F	X	50 6.0			7.7	48	
27 NOV	S3A	EP	Z	14 10 50.8	403.2	.3	.6		
		ES	X	59.0			.6		
27 NOV	S7A	EP	Z	15 36 19.0			1.2		
		ES	X	34.3			1.2		
27 NOV	S7A	E	X	15 37 9.4					



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
27 NOV	S10	EP	Z	15 37 47.5	161.3	.3	3.0		
		ES	X	38 22.4			3.0		
27 NOV	S1A	EP	Z	16 30 44.7	161.3	.4	3.5		
		ES	X	31 25.6			3.5		
27 NOV	S1A	EP	Z	18 1 27.4	806.5	.3	1.4		*
		ES	X	45.2			1.4		
27 NOV	S3A	EP	Z	18 1 29.2	564.5	.1	2.3		*
		ES	X	56.2			2.3		
27 NOV	S4A	EP	Z	18 1 38.5	999.9		N		*
		E	Y	2 1.1			N		
27 NOV	S7A	EP	Z	18 1 53.8	241.9	.2	2.9		*
		ES	X	2 28.3			2.9		
27 NOV	S10	EP	Z	18 2 32.7	322.6	.1	5.4		*
		ES	Y	3 35.6			5.4		
27 NOV	S7A	EP	Z	18 32 41.5			1.0		
		ES	Y	54.9			1.0		
27 NOV	S7A	EP	P	19 20 3.6			1.0		
		ES	X	17.1			1.0		
27 NOV	S7A	EP	P	19 48 41.2			.5		
		ES	X	48.6			.5		
27 NOV	S4A	EP	Z	21 43 33.9	161.3	.2	.6		
		ES	Z	42.8			.6		
27 NOV	S1A	EP	Z	21 43 51.8	80.1	.2	3.9		
		ES	X	44 37.2			3.9		
27 NOV	S4A	EP	Z	21 46 47.9	999.9		.6		
		ES	X	56.3			.6		
27 NOV	S7A	EP	Z	23 23 39.6			1.0		
		ES	Y	53.2			1.0		
27 NOV	S3A	EP	Z	23 44 3.4			4.4		
		ES	X	54.3			4.4		
27 NOV	S3A	EP	Z	23 46 45.4			2.2		
		ES	X	47 12.0			2.2		

DAY	STA	PHASE C		TIME		AMP	PER	DIST	AZI	RES
20 NOV	S7A	EP	P	1 16	50.8			.5		
		ES	Y		58.5			.5		
21 NOV	S7A	EP	Z	2 32	26.1	201.6	.1	.5		
		ES	X		32.3			.5		
28 NOV	S10	E	Y	3 54	12.6					
28 NOV	S4A	EP	Z	4 41	30.8	121.0	.2	2.0		
		ES	X		54.8			2.0		
28 NOV	S7A	EP	Z	4 41	50.5			1.1		
		ES	X	42	4.3			1.1		
28 NOV	S3A	EP	Z	4 52	59.3			1.5		
		ES	X	53	18.2			1.5		
28 NOV	S1A	EP	Z	4 53	22.5	161.3	.1	.5		
		ES	X		28.5			.5		
28 NOV	S4A	EP	Z	6 27	45.9	121.0	.2	1.7		
		ES	X	28	7.3			1.7		
28 NOV	S3A	E	Z	6 28	11.8	1.2U	.2			
28 NOV	S7A	EP	Z	7 7	30.2	201.6	.2	1.1		
		ES	X		44.3			1.1		
28 NOV	S4A	EP	Z	8 25	39.5	282.3	.2	N		*
		E	Y		43.0			N		
		E	X	26	.2			N		
28 NOV	S3A	EP	Z	8 25	56.9	766.1	.3	3.0		*
		E	X		59.5			3.0		
		ES	X	26	32.1			3.0		
28 NOV	S1A	EP	Z	8 26	5.5	201.6	.2	.9		*
		ES	X		17.5			.9		
28 NOV	S10	EP	Z	8 26	8.5	322.6	.2	3.8		*
		ES	Y		52.4			3.8		
28 NOV	S4A	EP	Z	9 44	36.3	1.2U	.2	N		
		E	Z		44.8			N		
		E	Z	45	7.2			N		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
28 NOV	S1A	EP	Z	9 54 56.4			.5		
		ES	X	55 4.2			.5		
28 NOV	S3A	EP	Z	9 55 .4			.9		
		ES	X	12.9			.9		
28 NOV	S7A	EP	Z	10 4 7.8	403.2	.1	.5		*
		ES	P	14.6			.5		
28 NOV	S4A	EP	Z	10 4 22.7	524.2	.2	1.4		*
		E	Y	28.1			1.4		
		ES	Y	40.6			1.4		
28 NOV	S3A	EP	Z	10 4 42.1			3.8		*
		ES	X	5 26.2			3.8		
28 NOV	S10	EP	Z	10 4 45.4	201.6	.2	3.1		*
		ES	X	5 22.1			3.1		
		E	Y	8 15.6			3.1		
28 NOV	S1A	EP	Z	10 4 52.2			1.9		*
		ES	X	5 15.2			1.9		
28 NOV 11 49 29.0 54.0N 160.9E NEAR E CST OF KAMCHAIKA									
H = 33 KM MAG = 4.3									
28 NOV	S10	EP	Z	11 52 6.9	241.9	.3	11.2	20	-2.5
		ES	Y	54 1.4			11.2	20	-12.9
28 NOV	S3A	EP	Z	11 52 37.4			13.7	36	-5.2
28 NOV	S1A	EP	Z	11 52 48.5			13.7	36	5.9
		E	X	53 5.4			13.7	36	
28 NOV	S4A	EP	Z	12 0 1.4	121.0	.2	.7		
		ES	Y	11.7			.7		
28 NOV	S7A	EP	Z	12 0 3.0	48.1	.2	.9		
		ES	Y	14.5			.9		
28 NOV	S7A	EP	P	13 55 27.9			1.3		
		ES	Y	44.5			1.3		
28 NOV	S1A	EP	Z	15 22 11.3			.5		
		ES	X	19.2			.5		
28 NOV	S3A	EP	Z	16 3 11.1			.5		
		ES	X	18.0			.5		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
28 NOV	S1A	EP	Z	16 3	13.9				
		ES	X		22.2		.6		
							.6		
28 NOV	S3A	EP	Z	16 4	51.5				
		ES	X		58.7		.5		
							.5		
28 NOV	S3A	EP	Z	20 32	59.0		2.1		
		ES	X		33 24.8		2.1		
28 NOV	S3A	EP	Z	22 44	36.2	846.8	.1	.6	*
		ES	X		44.3		.6		
28 NOV	S1A	EP	Z	22 44	39.3	201.6	.1	.9	*
		E	X		47.4		.9		
		ES	X		51.5		.9		
28 NOV	S4A	EP	Z	22 44	50.6	241.9	.2	1.4	*
		ES	Y		45 8.4		1.4		
29 NOV	S7A	EP	Z	0 45	7.6		.3		
		ES	Z		10.3		.3		
29 NOV	S1A	EP	Z	1 40	4.6	161.3	.1	.5	
		ES	X		11.1		.5		
29 NOV	S A	EP	Z	3 37	8.0	201.6	.1	.5	
		ES	X		15.1		.5		
29 NOV	S1A	EP	Z	5 28	10.0		.9		
		ES	X		22.1		.9		
29 NOV	S7A	EP	Z	8 15	23.2		.7		
		ES	Z		32.4		.7		
29 NOV	S10	E	Y	8 16	41.2				



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
29 NOV	14	8	13.8	42.2N 143.4E	HOKKAIDO, JAPAN REGION H = 33 KM MAG = 4.1				
29 NOV	S1A	EP	Z	14 9 .0	322.6	.2	3.3	246	-3.8
		E	X	4.6			3.3	246	
		E	X	25.2			3.3	246	
29 NOV	S3A	EP	Z	14 9 10.7	443.5	.2	3.3	246	6.5
		ES	X	54.9			3.3	246	12.8
29 NOV	S4A	EP	Z	14 9 25.6	999.9		4.5	238	4.5
		ES	Y	10 16.5			4.5	238	3.7
29 NOV	S7A	EP	Z	14 9 41.3	322.6	.3	5.7	239	3.3
		E	Z	10 45.9			5.7	239	
29 NOV	S10	EP	Z	14 10 16.3	80.6	.3	8.3	284	1.2
		ES	Y	11 43.3			8.3	264	-5.8
		E	Y	18 21.5			8.3	264	

29 NOV 14 59 .0 44.3N 150.6E OBS PRELIMINARY EPICENTER -- (5)  
H = 0 KM

29 NOV	S7A	EP	Z	14 59 18.2	846.8	.5	1.2	155	-5.0
		E	Z	33.3			1.2	155	
29 NOV	S4A	EP	Z	14 59 32.6	524.2	.2	1.6	105	3.6
		ES	Y	44.0			1.6	105	3.8
		E	Y	58.7			1.6	105	
29 NOV	S10	EP	Z	14 59 49.3			3.0	284	.3
		E	Y	15 0 26.7			3.0	284	
		E	Y	3 9.3			3.0	284	
29 NOV	S3A	EP	Z	14 59 50.9	322.6	.3	2.4	72	-9.7
		ES	Z	54.2			2.4	72	8.3
		E	X	15 0 32.3			2.4	72	
29 NOV	S1A	EP	Z	14 59 59.7	161.3	.1	3.2	68	7.4
		ES	X	15 0 15.5			3.2	68	1.3
29 NOV	S7A	EP	Z	16 29 18.7			.5		
		ES	Z	25.3			.5		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
29NOV	17 16	34.0	41.5N	144.2E	HOKKAIDO, JAPAN REGION				
					H = 40 KM		MAG = 4.5		
29NOV	S1A	EP	Z	17 17 08.4	1.50	.2	.9	227	-3.2
		ES	X	19.9			.9	227	-19.9
29NOV	S3A	EP	Z	17 17 20.0	685.5	.7	3.2	230	-2.8
		ES	X	48.0			3.2	23	-10.2
29NOV	S4A	EP	Z	17 17 36.4	999.9		4.5	226	-5.1
		E	Y	42.0			4.5	226	
		ES	Y	18 21.3			4.5	226	-12.1
29NOV	S7A	EP	Z	17 17 52.0	564.5	.5	5.7	229	-5.0
		E	P	18 51.4			5.7	229	
29NOV	S10	EP	Z	17 18 21.8	282.3	.6	8.0	258	-8.1
		E	Z	38.5			8.0	258	
		E	Y	19 42.9			8.0	258	
		E	Y	22 53.1			8.0	258	
		E	Y	25 57.7			8.0	258	
29NOV	S10	EP	Z	19 53 18.9	80.6	.3	4.7		
		ES	Y	54 13.3			4.7		
		E	Y	58 34.0			4.7		
29NOV	S3A	EP	Z	21 1 45.8	282.3	.2			
29NOV	S1A	EP	Z	21 1 51.7	322.6	.2	1.6		
		ES	X	2 11.2			1.6		
29NOV	S10	E	Y	23 41 2.0					
		E	Y	43 53.8					
30NOV	S1A	EP	Z	0 1 45.6	403.2	.1	.8		
		ES	X	56.2			.8		
30NOV	S3A	EP	Z	0 1 47.4			.8		
		ES	X	57.9			.8		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
30 NOV	0 4	36.0	46.9N	152.7E	KURILE IS H = 33 KM		MAG = 4.4		
30 NOV	S7A	EP	Z	0 5 16.7	403.2	.4	2.5	50	2.0
		E	Z	36.1			2.5	50	
		E	P	7 22.1			2.5	50	
30 NOV	S10	EP	Z	0 5 25.1	80.6	.2	3.5	339	-4.6
		ES	X	6 2.6			3.5	339	-8.2
		E	Y	8 47.4			3.5	339	
30 NOV	S4A	EP	Z	0 5 33.8	201.6	.2	3.7	52	2.2
		E	Z	34.9			3.7	52	
		ES	X	6 12.8			3.7	52	-1.4
30 NOV	S3A	EP	Z	0 5 52.9	282.3	.3	5.0	47	2.6
		ES	X	6 48.1			5.0	47	.5
30 NOV	S1A	E	Z	0 6 2.5			5.0	47	
		ES	X	7 7.4			5.0	47	19.8
30 NOV	0 30	27.7	30.7N	141.9E	S OF HONSHU, JAPAN H = 20 KM		MAG = 4.7		
30 NOV	S1A	EP	Z	0 33 29.5			13.0	198	-3.2
		ES	X	35 46.1			13.0	198	-12.6
30 NOV	S3A	EP	Z	0 33 39.9			13.6	201	-2.1
		ES	X	36 01.1			13.6	201	-12.7
		E	P	47 25.2			13.6	201	
30 NOV	S1A	EP	Z	0 46 4.7			N		
		E	X	48.5			N		
		E	X	47 38.0			N		
30 NOV	S1A	EP	Z	0 49 29.4			.5		
		ES	X	35.5			.5		
30 NOV	S3A	EP	P	1 6 37.2			1.6		
		ES	X	56.8			1.6		
30 NOV	S4A	EP	Z	2 13 20.4	322.6	.2	.5		*
		ES	X	27.6			.5		
30 NOV	S3A	EP	Z	2 13 31.9			1.4		*
		ES	X	49.3			1.4		
30 NOV	S1A	EP	Z	2 13 47.4			2.0		*
		ES	X	14 11.7			2.0		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
30 NOV	S1A	EP	Z	2 45 19.6			3.7		
		ES	X	46 2.4			3.7		
30 NOV	3 36	33.0	38.2N	141.3E	NR E COAST OF HONSHU, JAPAN H = 34 KM MAG = 4.0				
30 NOV	S1A	EP	Z	3 38 10.1	161.3	.2	7.1	223	-7.1
		E	X	39 21.3			7.1	223	
		ES	X	55.0			7.1	223	17.2
30 NOV	S3A	EP	Z	3 38 22.8			7.1	228	5.6
		ES	X	39 39.6			7.1	228	1.8
30 NOV	S10	EP	Z	5 12 56.6	80.6	.2	4.0		
		ES	Y	13 42.7			4.0		
30 NOV	S7A	E	Z	5 13 43.9	322.6	.1			
30 NOV	S7A	E	Z	5 20 32.5	1.8U	.5			
30 NOV	S4A	EP	Z	5 20 37.3	999.9		L		
30 NOV	S3A	EP	Z	5 20 53.2	403.2	.4	2.3		
		ES	X	21 20.3			2.3		
		E	X	53.0			2.3		
30 NOV	S1A	EP	Z	5 21 2.9	48.1	.2	3.0		
		ES	X	38.0			3.0		
30 NOV	S10	EP	Z	5 21 4.7	443.5	.3	3.2		
		E	Z	6.4			3.2		
		ES	X	41.9			3.2		
		E	Y	24 45.7			3.2		
30 NOV	S10	EP	Z	8 51 9.9	403.2	.3	4.1		*
		ES	Y	57.4			4.1		
		E	Y	55 15.2			4.1		
30 NOV	S3A	EP	Z	8 51 45.3			R		*
		ES	X	53 4.6			R		
30 NOV	S1A	EP	Z	8 51 54.9			1.2		*
		ES	X	52 10.0			1.2		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
30 NOV	S4A	EP	Z	10 23 21.1	483.9	.1	.9		
		ES	Y	33.0			.9		
30 NOV	S4A	EP	Z	11 50 15.3	282.3	.1	.5		
		ES	Y	21.2			.5		
30 NOV	S1A	EP	Z	16 42 31.5			4.6		
		ES	X	43 24.5			4.6		
30 NOV	S10	EP	Z	18 31 16.6			2.2		
		ES	Y	43.2			2.2		
30 NOV	S1A	EP	Z	21 43 37.1			.8		
		ES	X	47.5			.8		
01 DEC	S10	EP	Z	0 53 52.7			4.2		
1		ES	X	54 42.0			4.2		
1 DEC	S1A	EP	Z	3 27 17.0			R		
		ES	X	29 4.2			R		
1 DEC	S4A	EP	Z	3 29 35.6			L		
		E	X	50.7			L		
1 DEC	S10	EP	Z	3 29 39.0			4.7		
		ES	Y	30 33.6			4.7		
1 DEC	S1A	EP	Z	3 37 19.2			1.8		
		ES	X	40.9			1.8		
1 DEC	S1A	EP	Z	3 46 53.4	403.2	.1	.5		
		ES	X	47 1.4			.5		
1 DEC	S4A	EP	Z	3 47 15.6			L		
		E	Y	37.6			L		

1 DEC 4 56 58.2 14.0S 167.1E NEW HEBRIDES IS  
H = 132 KM MAG = 6.1

1 DEC	S4A	EP	Z	5 7 .4	362.9	.8	60.8	159	1.7
		E	Z	11.9			60.8	159	
		EPCP	Z	29.7			60.8	159	-11.1

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
1DEC	S1A	E	Z	6 11 6.5					
		E	X	19.2			L		
1DEC	S3A	E	Z	6 11 54.3	403.2	.2			
1DEC	S7A	EP	Z	9 24 33.3	64.1	.2	2.8		
		ES	Z	25 6.9			2.8		
1DEC	S10	E	Y	9 25 14.9					
1DEC	S10	EP	Z	10 51 57.7	121.0	.3	3.6		
		ES	Y	52 39.9			3.6		
		E	Z	56 46.4			3.6		
1DEC	S10	EP	Z	11 41 53.5	121.0	.3	R		
		ES	Y	43 18.7			R		
1DEC	S4A	EP	Z	13 29 34.8	322.6	.2	1.0		
		ES	Y	47.9			1.0		
1DEC	S1A	EP	Z	13 29 36.0			1.7		
		ES	X	57.4			1.7		

1DEC 15 21 3.6 40.7N 142.0E NR E COAST OF HONSHU, JAPAN  
H = 33 KM MAG = 3.9

1DEC	S1A	EP	Z	15 22 10.8	604.8	.3	4.2	235	4.4
		ES	X	59.2			4.2	235	4.5
1DEC	S3A	EP	Z	15 22 22.3			5.0	236	4.7
		ES	X	23 17.7			5.0	236	3.1
1DEC	S4A	EP	Z	15 22 38.8	201.6	.2	6.2	232	3.1
		ES	Y	23 43.1			6.2	232	-3.8
1DEC	S10	EP	Z	15 23 27.2	161.3	.4	9.8	257	2.1
		ES	Y	25 5.2			9.8	257	-9.9
		E	Y	33 52.0			9.8	257	

1DEC	S10	EP	Z	15 51 2.3	201.6	.2	2.4		
		ES	Y	30.8			2.4		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
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1DEC 16 46 38.0 44.8N 150.9E OBS PRELIMINARY EPICENTER -- (5)  
H = 0 KM

1DEC	S7A	-IP	Z	16 46 54.9	806.5	.2	.9	128	-2.4
1DEC	S4A	EP	Z	16 47 7.1	282.3	.2	1.7	86	-2.1
		ES	Y	17.5			1.7	86	-1.4
		E	Y	27.0			1.7	86	
1DEC	S3A	EP	Z	16 47 25.1			2.8	63	.6
		E	X	58.2			2.8	63	
1DEC	S10	EP	Z	16 47 25.1	564.5	.2	2.9	295	-1.0
		E	Z	26.6			2.9	295	
		ES	Y	57.9			2.9	295	18.1
		E	Y	50 44.1			2.9	295	
1DEC	S1A	EP	Z	16 47 33.7			3.6	61	-2.1
		ES	X	48 5.7			3.6	61	-4.5

1DEC	S4A	EP	Z	17 19 51.7	241.9	.2	.6		
		ES	Y	20 .2			.6		
1DEC	S7A	EP	P	17 19 51.9			.7		
		ES	Z	20 1.2			.7		
1DEC	S7A	EP	Z	17 58 11.0			1.3		
		ES	Z	27.1			1.3		
1DEC	S10	EP	Z	18 20 17.9			3.4		
		ES	Y	52.8			3.4		
		E	X	44 1.2			3.4		

1DEC 18 56 23.1 41.6N 139.6E HOKKAIDO, JAPAN REGION  
H = 173 KM MAG = 5.4

1DEC	S1A	EP	Z	18 57 41.0	846.8	.3	5.3	255	-1.2
		E	X	43.5			5.3	255	
1DEC	S3A	EP	Z	18 57 51.3	201.6	.1	6.1	254	-.9
1DEC	S4A	EP	Z	18 58 4.1	999.9		7.2	248	-2.8
		E	Z	59 19.0			7.2	248	
1DEC	S7A	EP	Z	18 58 19.3	999.9		8.4	247	-3.2
		E	Z	59 46.0			8.4	247	
1DEC	S10	EP	Z	18 58 55.1	604.8	.7	11.2	265	-4.4
		E	Z	56.7	564	3	11.2	265	
		E(PP)	Z	59.0			11.2	265	-17.9
		E	Z	19 0 50.5			11.2	265	
		E	Y	7 21.0			11.2	265	

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
1DEC	S7A	EP	P	20 36 33.9			1.0		
		ES	Z	46.5			1.0		
1DEC	S10	EP	Z	20 37 10.2	80.5	.2	3.5		
		ES	X	50.6			3.5		
1DEC	S4A	EP	Z	21 7 59.9	282.3	.2	1.7		
		ES	Y	8 21.4			1.7		
1DEC	S1A	EP	Z	21 29 6.1			.5		
		ES	X	12.4			.5		
1DEC	S1A	E	X	21 35 50.7					
1DEC	S1A	EP	Z	21 44 11.2			1.7		
		ES	X	32.5			1.7		
1DEC	S3A	E	Z	22 24 51.1	201.6	.1			
1DEC	S1A	EP	Z	22 24 51.2	201.6	.1	.9		
		ES	X	25 3.2			.9		
1DEC	S4A	EP	Z	22 25 8.4	121.0	.2	1.6		
		ES	X	28.8			1.6		
1DEC	S4A	EP	Z	22 41 38.1	80.6	.2	2.3		
		ES	Y	42 6.1			2.3		
1DEC	S4A	EP	Z	22 42 36.0	80.6	.2	1.8		
		ES	Y	58.4			1.8		
1DEC	S10	EP	Z	22 42 41.0			2.3		
		ES	Y	43 8.8			2.3		
1DEC	S4A	+1P	Z	22 51 46.8	645.2	.1	.5		*
		E	Y	51.6			.5		
		ES	Y	53.4			.5		
1DEC	S3A	EP	Z	22 52 1.4	161.3	.2	1.3		*
		ES	X	17.7			1.3		
1DEC	S1A	EP	Z	22 52 12.8			3.2		*
		ES	X	50.7			3.2		
1DEC	S10	EP	Z	22 52 36.7			3.9		*
		ES	Y	53 22.6			3.9		
		E	Y	57 14.4			3.9		



JAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
1DEC	S4A	EP	Z	23 6 56.4	725.8	.2	.7		
		ES	Y	7 8.2			.9		
1DEC	S10	EP	Z	23 7 33.3			2.6		
		ES	X	8 15.8			3.6		
1DEC	S4A	EP	Z	23 41 55.8	161.3	.2	.8		
		E	Z	57.7			.8		
		ES	Y	42 6.5			.8		
1DEC	S1A	EP	Z	23 42 20.1			2.9		
		ES	X	54.3			2.9		
2DEC	S1A	EP	Z	0 49 57.5			5.1		
		ES	X	50 55.7			5.1		
2DEC	S10	EP	Z	1 20 17.7			2.8		
		E	Y	50.5			2.8		
		E	Y	23 35.1			2.8		
2DEC	S5A	EP	Z	3 17 4.9	403.2	.2	1.0		
		ES	Z	18.3			1.0		
2DEC	S4A	EP	Z	3 17 10.3			1.3		
		E	Z	12.1			1.3		
		ES	X	27.0			1.3		
2DEC	S5A	EP	Z	3 20 53.2	161.3	.2	.7		
		ES	Z	21 3.4			.7		
2DEC	S4A	EP	Z	3 21 35.0			.1		
		ES	Y	35.1			.1		
2DEC	S5A	EP	Z	3 23 55.5	564.5	.2	R		
		E	Z	24 1.9			R		
		E	Z	57.4			R		
2DEC	S10	EP	Z	3 24 18.5	161.3	.2	.2		
		ES	Y	21.0			.2		
		E	Y	25 35.5			.2		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
2DEC	6 57	20.0	45.2N	151.1E	OBS PRELIMINARY EPICENTER -- (4)				
					H = 0 KM				
2DEC	S5A	EP	Z	6 57 52.0	282.3	.2	1.9	18	-1.6
		ES	Y	58 12.4			1.9	18	10.7
		E	Z	59 40.1			1.9	18	
		E	Z	47.9			1.9	18	
2DEC	S4A	EP	Z	6 57 52.6	604.8	.2	1.9	74	-1.4
		ES	Y	58 12.9			1.9	74	11.2
2DEC	S10	EP	Z	6 58 7.7	80.6	.3	2.9	303	-1.2
		ES	X	42.9			2.9	303	18.8
		E	Y	7 1 35.4			2.9	303	
2DEC	S1A	EP	Z	6 58 21.5			3.9	57	-7
		ES	X	59 13.8			3.9	57	7.0
2DEC	S1A	EP	Z	7 8 12.5			.9		
		ES	X	24.5			.9		
2DEC	S5A	EP	Z	8 38 20.2	161.3	.2	2.3		
		ES	Y	47.6			2.3		
2DEC	S4A	EP	Z	8 38 25.3	282.3	.2	L		
2DEC	9 31	17.6	3.2N	128.1E	N OF HALMAHERA				
					H = 92 KM MAG = 5.8				
2DEC	S1A	EP	Z	9 39 12.2	1.2U	.7	43.0	208	2.6
2DEC	S4A	EP	Z	9 39 27.3	241.9	.6	45.1	209	1.2
		E	Z	44.9			45.1	209	
2DEC	S5A	EP	Z	10 46 40.8			R		
		ES	Z	47 57.3			R		
2DEC	S10	EP	Z	10 46 51.4			3.5		
		ES	X	47 32.4			3.5		
2DEC	S4A	EP	Z	13 31 36.8			.8		
		ES	Y	48.1			.8		
2DEC	S4A	EP	Z	14 22 3.4	282.3	.2	1.2		
		ES	Y	19.0			1.2		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
2DEC	S5A	EP	Z	14 22 15.6	121.0	.2	2.2		
		ES	Z	41.9			2.2		
2DEC	S4A	EP	Z	15 26 4.5	201.6	.2	.5		
		ES	Y	12.3			.5		
2DEC	S4A	EP	Z	16 37 57.2	403.2	.2	.6		*
		E	Z	58.3			.6		
		ES	X	38 5.8			.6		
2DEC	S1A	EP	Z	16 38 7.3			2.2		*
		ES	X	34.0			2.2		
2DEC	S5A	EP	Z	16 38 11.4	80.6	.2	1.8		*
		ES	Y	33.2			1.8		
2DEC	S7A	EP	Z	18 9 8.8			2.7		*
		ES	Z	41.3			2.7		
2DEC	S10	EP	Z	18 9 11.1	201.6	.1	4.2		*
		ES	Y	10 .0			4.2		
2DEC	S5A	EP	Z	18 9 21.1	80.6	.2	4.8		*
		ES	X	10 16.5			4.8		
2DEC	S1A	EP	Z	21 38 55.3	524.2	.2	L		*
2DEC	S4A	EP	Z	21 39 13.8	645.2	.2	1.5		*
		E	Y	27.4			1.5		
		ES	Y	33.0			1.5		
2DEC	S5A	EP	Z	21 39 22.2	483.9	.2	2.3		*
		E	Z	24.8			2.3		
		ES	Y	50.3			2.3		
2DEC	S10	EP	Z	21 40 1.9			5.1		*
		ES	X	41 .6			5.1		
2DEC	S10	EP	Z	21 45 10.2			3.4		
		ES	X	49.6			3.4		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
2DEC 22 30 2.8 43.0N 150.4E KURILE EXPLOSION H = 0 KM									
2DEC	S5A	+IP	Z	22 30 13.4	999.7		.4	168	-1.7
		E	P	20.9			.4	168	
2DEC	S1A	EP	Z	22 30 50.8			2.9	92	.3
		E	X	33 8.3			2.9	92	
		ET	P	50.0			2.9	92	
2DEC	S10	EP	Z	22 30 46.1			3.1	260	-8.0
		ES	Y	31 25.5			3.1	260	11.4
		E	P	33 56.6			3.1	260	
2DEC	S4A	ET	P	22 32 33.6			L		
2DEC 23 46 55.2 43.9N 149.0E KURILE IS REGION H = 98 KM MAG = 4.1									
2DEC	S5A	EP	Z	23 47 14.7	161.3	.8	1.0	298	-1.5
2DEC	S1A	EP	Z	23 47 27.5	161.3	.2	2.0	67	-.1
2DEC	S10	EP	Z	23 47 49.4	645.2	.2	4.1	276	-6.9
		ES	Y	48 33.4			4.1	276	-9.5
2DEC	S4A	-IP	Z	23 47 2.2	999.9		.9	156	-12.3
3DEC 5 21 2.9 43.7N 149.7E KURILE EXPLOSION H = 0 KM									
3DEC	S5A	EP	Z	5 21 18.5	201.6	.3	.5	304	1.5
		ES	Y	23.0			.5	304	1.2
		ET	P	49.2			.5	304	
3DEC	S4A	EP	Z	5 21 32.1	403.2	.3	1.3	139	3.4
		ES	Y	22 1.6			1.3	139	19.9
		E	Y	38.0			1.3	139	
3DEC	S7A	EP	Z	5 21 36.4	362.9	.3	1.7	186	3.1
		E	Z	22 50.3			1.7	186	
		ET	P	23 11.1			1.7	186	
3DEC	S1A	EP	Z	5 21 46.8	403.2	.5	2.4	76	2.9
		F	X	22 39.5			2.4	76	
		ET	P	24 3.8			2.4	76	
3DEC	S10	EP	Z	5 22 3.3			3.5	273	3.0
		ET	P	25 30.5			3.5	273	



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
3DEC	S4A	EP	Z	6 20 6.8	322.6	.2	.5		
		E	Z	7.3			.5		
		ES	X	13.0			.5		
3DEC	S5A	EP	Z	6 20 24.3	80.6	.2	1.2		
		ES	Y	39.4			1.2		
3DEC	S10	EP	Z	6 21 43.6					
3DEC	S1A	EP	Z	9 9 31.6	161.3	.2	1.3		
		ES	X	48.5			1.3		
3DEC	S1A	EP	Z	9 50 52.7			3.2		
		ES	X	51 30.5			3.2		
3DEC	S7A	EP	P	9 58 53.8			1.3		
		ES	Z	59 10.1			1.3		
3DEC	S4A	EP	Z	13 4~ 49.9	80.1	.2	.1		
		ES	X	51.2			.1		
3DEC	S4A	EP	Z	15 22 23.6	161.3	.2	1.2		*
		ES	Y	39.2			1.2		
3DEC	S5A	EP	X	15 22 29.4			1.8		*
		ES	X	51.1			1.8		
3DEC	S10	EP	Z	15 22 50.9	80.6	.2	3.5		*
		ES	Y	23 31.5			3.5		
3DEC	S7A	EP	Z	16 58 4.0	999.9				*
3DEC	S4A	EP	Z	16 58 12.1	322.6	.3	.9		*
		ES	X	23.9			.9		
3DEC	S5A	EP	Z	16 58 22.5	201.6	.2	1.8		*
		ES	Y	44.3			1.8		
3DEC	S10	EP	P	16 58 50.1			3.2		*
		ES	Y	59 27.7			3.2		
3DEC	S10	EP	Z	19 37 32.1			3.8		
		ES	Y	38 16.2			3.8		
3DEC	S7A	EP	P	21 27 27.0			R		
		ES	Z	29 58.3			R		
		ET	P	31 13.6			R		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
3DEC	S1A	EP	Z	22 6 .9	604.8	.3	R		
		ES	X	7 53.0			R		
		E	P	11 49.6			R		
3DEC	S4A	EP	Z	22 7 28.7	282.3	.5	T		
3DEC	S5A	EP	Z	22 7 32.4	80.6	.2	R		
		E	Y	52.2			R		
		ES	X	8 46.1			R		
3DEC	S10	EP	Z	22 8 12.6	32.1	.3			
		E	Y	9 51.8					
		E	Y	18 3.0					
3DEC	S5A	EP	Z	22 14 3.4	241.9	.4			
		E	Z	50.5					

3DEC 22 49 3.1 44.4N 149.0E KURILE EXPLOSION  
H = 0 KM

3DEC	S4A	EP	Z	22 49 15.2	999.9		.5	131	-1.4
		E	Z	18.8			.5	131	
3DEC	S5A	EP	Z	22 49 30.5	443.5	.5	1.4	317	1.4
		E	Z	45.8			1.4	317	
		ET	P	50 57.2			1.4	317	
3DEC	S1A	E	Z	22 49 48.7	806.5	.4	2.2	55	
		ES	X	55.8			2.2	55	9.0
		E	P	51 43.4			2.2	55	
3DEC	S10	EP	Z	22 50 09.0			4.1	283	.6
		ES	Y	58.1			4.1	283	-1.4
		E	P	54 21.1			4.1	283	

3DEC	S4A	EP	Z	23 30 33.3	201.6	.2	1.6		
		ES	Y	52.6			1.6		
4DEC	S5A	EP	Z	1 12 30.5	241.9	.2	1.1		
		ES	Y	44.5			1.1		
4DEC	S1A	EP	Z	1 53 57.4	161.3	.1	.6		
		ES	X	54 6.3			.6		
4DEC	S5A	EP	Z	4 1 44.0			2.4		
		ES	Y	2 12.9			2.4		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
4DEC	S5A	EP	Z	4 42 30.9			5.9		
		ES	Z	43 38.4			5.9		
4DEC	S5A	EP	P	6 38 59.4					
		E	Z	39 13.1					
4DEC	S4A	EP	Z	9 48 18.0	403.2	.2	.9		*
		ES	Y	29.9			.9		
4DEC	S1A	EP	Z	9 48 26.5			1.6		*
		ES	X	46.4			1.6		
4DEC	S7A	EP	Z	9 48 31.9			1.8		*
		ES	X	54.0			1.8		
4DEC	S5A	EP	Z	9 48 33.0	201.6	.2	N		*
		E	Z	36.0			N		
		E	Y	58.2			N		
4DEC	S7A	EP	Z	12 1 54.5			.9		
		ES	X	2 6.9			.9		
4DEC	S1A	EP	Z	12 38 51.7			1.7		
		ES	X	39 12.2			1.7		
4DEC	S5A	EP	Z	13 42 34.8	443.5	.2	.4		
		ES	Y	39.7			.4		
4DEC	S1A	EP	Z	15 56 31.5			5.6		*
		ES	X	57 36.4			5.6		
4DEC	S4A	EP	Z	15 56 57.7	80.6	.3	N		*
		ES	X	58 19.6			N		
4DEC	S5A	EP	Z	15 57 4.3	121.0	.2			*
		E	Z	12.3					
		E	Y	58 35.2					

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
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4DEC 16 24 27.9 38.7N 144.2E OFF E COAST OF HONSHU, JAPAN  
H = 33 KM MAG = 4.0

4DEC	S1A	EP	Z	16 25 35.5	403.2	.4	4.8	202	-4.0
		ES	X	26 29.0				202	-5.6
		E	X	30 25.0				202	
4DEC	S5A	EP	Z	16 25 59.0	403.2	.4	6.6	226	-5.7
		E	Z	26 3.5				226	
		ES	Y	27 9.5				226	-10.0
		E	Z	34 14.9				226	
4DEC	S4A	EP	Z	16 26 2.2	403.2	.3	6.8	210	-5.8
		E	Z	13.8				210	
		ES	X	27 11.4				210	-14.0
4DEC	S7A	ES	Y	16 27 39.6			7.9	215	-12.7
4DEC	S10	EP	Z	16 26 34.5	80.6	.3	9.2	241	-7.0
		E	Y	28 5.9				241	

4DEC	S7A	EP	P	19 13 21.6			.7			
		ES	X	31.0			.7			
4DEC	S1A	EP	Z	20 42 47.7			2.9			
		ES	X	43 22.0			2.9			
4DEC	S5A	EP	Z	20 43 9.4	403.2	.2	4.3			
		E	Z	16.5						4.3
		ES	Y	59.2						4.3
4DEC	S5A	EP	Z	21 32 4.0	121.0	.2	1.3			
		ES	Y	20.6						1.3
4DEC	S1A	EP	Z	22 9 2.5			1.5			
		ES	X	21.6			1.5			



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
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4DEC 22 24 3.0 44.6N 150.9E KURILE EXPLOSION  
H = 0 KM

4DEC	S5A	EP	Z	22 24 28.3	685.5	.4	1.3	20	.5
		E	Z	36.4				20	
		ES	Y	46.5				20	
		ET	P	25 35.8				20	
4DEC	S10	EP	Z	22 24 47.9	121.0	.4	2.8	291	-2.2
		E	Y	25 32.1				291	
		ET	P	27 38.1				291	
4DEC	S1A	EP	Z	22 24 58.0			3.5	64	-1.6
		ET	P	28 30.2				64	

4DEC	S4A	E	Z	22 24 51.0					
		ET	P	25 24.6					

4DEC	S5A	EP	Z	23 21 32.4	725.8	.3			
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5DEC	S5A	EP	P	2 12 58.3			4.6		
		ES	Z	13 51.8					

5DEC	S5A	E	Z	3 5 24.9	524.2	.4			
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5DEC 3 22 3.1 44.5N 151.4E KURILE EXPLOSION  
H = 0 KM

5DEC	S7A	EP	Z	3 22 32.7	322.6	.3	1.3	129	3.7
		ET	P	23 50.1				129	
5DEC	S5A	EP	Z	3 22 27.3	241.9	.2	1.4	36	-1.8
		E	Z	34.0				36	
		ES	Y	42.8				36	
		ET	P	23 33.7				36	
5DEC	S1A	EP	Z	3 23 7.1			3.8	68	3.1
		ET	P	26 59.5				68	
5DEC	S4A	E	Z	3 24 4.6					
		ET	P	44.4					

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
5DEC	S1A	EP	Z	3 30 47.6			4.8		*
		ES	X	31 42.8			4.8		
5DEC	S4A	EP	Z	3 31 1.8	201.6	.2	R		*
		E	X	21.1			R		
		E	X	32 .7			R		
5DEC	S5A	EP	Z	3 31 18.6	645.2	.2	R		*
		E	Z	25.7			R		
		ES	Y	32 31.0			R		
5DEC	S7A	E	Z	3 56 43.6	362.9	.2			
5DEC	S4A	EP	Z	5 15 29.8	121.0	.3	N		*
		E	Y	16 18.9			N		
		ES	X	30.6			5.0		
5DEC	S1A	EP	Z	5 15 33.4	362.9	.2	5.0		*
5DEC	S5A	EP	Z	5 15 47.4	403.2	.2	5.5		*
		ES	Y	16 50.8			5.5		
5DEC	S5A	EP	Z	11 53 57.7	483.9	.2	.4		
		ES	Y	54 2.8			.4		
5DEC	S4A	EP	Z	14 22 48.6	443.5	.3	.6		
		ES	X	57.1			.6		
5DEC	S7A	E	Y	14 22 59.9					
5DEC	S5A	EP	Z	15 12 45.9			1.2		
		ES	Y	13 .7			1.2		
5DEC	S5A	EP	Z	17 44 26.6	201.6	.1	.4		
		ES	Y	31.1			.4		
5DEC	S1A	E	Z	18 0 17.2					
5DEC	S7A	F	Z	18 18 28.9	161.3	.2			
5DEC	S1A	EP	Z	19 9 21.2			3.2		
		ES	X	59.2			3.2		
5DEC	S7A	EP	Z	19 14 31.0	403.2	.2	.5		
		ES	X	36.5			.5		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
5DEC	S4A	EP	Z	19 14 42.4	121.0	.3	1.0		
		ES	X	55.8			1.0		
5DEC	S5A	EP	Z	19 29 56.7	80.6	.2	R		
		ES	Y	30 59.7			R		
5DEC	S1A	EP	Z	22 51 53.7			2.4		
		ES	X	52 22.2			2.4		
6DEC	S1A	EP	Z	0 25 26.5	604.0	.2	.5		
		ES	X	33.0			.5		
6DEC	S7A	EP	Z	4 33 29.3	443.5	.1	.9		*
		ES	X	41.8			.9		
6DEC	S4A	EP	Z	4 33 45.6	564.5	.3	2.1		*
		E	Z	48.2			2.1		
		ES	X	34 10.5			2.1		
6DEC	S5A	EP	Z	4 33 46.3	201.6	.1	2.1		*
		ES	Y	34 12.0			2.1		
		E	Z	36 2.2			2.1		
6DEC	S1A	EP	Z	4 34 15.5			4.3		*
		ES	X	35 5.5			4.3		
6DEC	S5A	E	Z	5 4 40.6	282.3	.4			
6DEC	S1A	EP	Z	7 1 37.7			1.5		
		ES	X	56.0			1.5		
6DEC	S5A	EP	P	7 2 45.8			1.9		
		ES	X	3 9.2			1.9		
6DEC	S1A	EP	Z	7 15 24.4			1.0		
		ES	X	38.0			1.0		
5DEC	7 18 39.9	50.1N	159.8E	KURILE IS REGION					
				H = 27 KM		MAG = 5.4			
6DEC	S7A	ES	Y	7 22 3.0			8.2	51	-9.1
5DEC	S4A	EP	Z	7 20 52.4	121.0	.2	9.4	51	-3.8
		E	Z	55.8			9.4	51	
		ES	X	22 28.1			9.4	51	-13.6



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
6DEC	S1A	EP	Z	7 19 38.5					
		ES	X	20 17.0			3.3		
		E	Z	21 21.0			3.3		
		E	Z	22 11.2			3.3		
							3.3		
6DEC	S4A	EP	Z	7 19 44.6	161.3	.2	2.6		
		ES	X	20 15.5			2.6		
6DEC	S5A	EP	Z	7 20 3.0	161.3	.2			
		E	Z	10.3					
6DEC	S5A	E	Z	7 20 41.7	121.0	.2			
		E	Z	46.7					
		E	Z	52.2					
		E	Z	21 5.0					
		E	Z	22 20.2					
6DEC	S5A	E	Z	7 26 3.6	282.3	.3			
		E	Z	29 26.3					
		E	Z	30 2.1					
6DEC	S1A	EP	Z	7 52 45.7	282.3	.1	.7		
		ES	X	55.5			.7		
6DEC	S1A	EP	Z	7 54 53.6	201.6	.1	.6		
		ES	X	55 2.3			.6		
6DEC	S4A	EP	Z	7 55 12.4	201.6	.3	1.7		
		ES	X	32.9			1.7		

6DEC 10 45 2.0 41.9N 141.1E HOKKAIDO, JAPAN REGION  
H = 127 KM MAG = 4.3

6DEC	S1A	EP	Z	10 46 3.5	201.6	.3	4.2	254	-1.8
		E	Z	50.6			4.2	254	
6DEC	S4A	EP	Z	10 46 27.1	846.8	.3	6.1	245	-3.7
		ES	X	47 29.5			6.1	245	-10.3
6DEC	S5A	EP	Z	10 46 38.6	766.1	.3	6.9	261	-3.7
		E	P	46.0			6.9	261	
		ES	X	47 49.4			6.9	261	-10.9



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
6 DEC	S4A	EP	Z	10 58 14.8			4.6		*
		ES	X	59 7.7			4.6		
6 DEC	S5A	EP	Z	10 58 32.2	564.5	.2			*
		E	P	39.4					
6 DEC	S1A	E	Z	10 58 58.4	201.6	.1			*
6 DEC	S5A	EP	Z	10 59 39.7	403.2	.2	L		
		E	Z	45.5			L		
6 DEC	S1A	EP	Z	12 1 23.9	48.1	.2	R		
		ES	X	3 11.2			R		
6 DEC	S5A	EP	Z	12 1 41.6	564.5	.2	L		
		E	P	48.5			L		
		E	Y	58.7			L		
6 DEC	S4A	EP	Z	12 2 .3	161.3	.3	2.4		
		E	Y	7.0			2.4		
		ES	X	29.4			2.4		
6 DEC	S5A	EP	Z	13 49 59.3			1.5		
		ES	Y	50 17.6			1.5		
6 DEC	S5A	EP	Z	16 2 41.5	322.6	.2	4.9		
		ES	Y	3 38.5			4.9		
6 DEC	S4A	EP	Z	16 2 44.8	80.6	.3	N		
		E	X	3 42.4			N		
6 DEC	S5A	EP	Z	19 51 46.5	685.5	.2	.8		*
		F	Z	53.3			.8		
		ES	Y	57.9			.8		
6 DEC	S7A	EP	Z	19 51 53.4	241.9	.2	1.6		*
		ES	X	52 12.9			1.6		
6 DEC	S4A	EP	Z	19 51 53.6	322.6	.3	L		*
		E	Z	55.1			L		
6 DEC	S1A	EP	Z	19 52 13.8			1.6		*
		ES	X	34.2			1.6		
6 DEC	S1A	EP	Z	20 48 34.2	604.8	.1	.8		
		ES	Z	45.2			.8		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
7DEC	S4A	EP	Z	1 46 23.1	201.6	.6			
		E	Y	31.0			L		
		E	Y	42.2			L		

7DEC 4 15 22.1 46.9N 153.7E KURILE ISLANDS  
H = 40 KM MAG = 4.5

7DEC	S7A	EP	Z	4 16 7.8	60.1	.2	3.0	58	-1.2
		ES	X	45.8					
7DEC	S4A	EP	Z	4 16 24.2	443.5	.2	3.0	58	1.2
		ES	X	17 11.1			4.2	57	-1.7
7DEC	S5A	EP	Z	4 16 17.6	282.3	.2	4.2	57	-3.8
		E	Z	21.1			4.2	34	-8.3
		E	Y	58.7			4.2	34	
		E	Z	19 3.2			4.2	34	
7DEC	S1A	EP	Z	4 16 52.5			4.2	34	
		ES	X	18 15.8			6.3	51	-2.6
							6.3	51	8.8

7DEC 6 50 34.8 33.0N 137.6E S OF HONSHU, JAPAN  
H = 348 KM MAG = 4.1

7DEC	S1A	EP	Z	6 53 22.2	161.3	.2	12.3	218	.7
		ES	X	55 37.1					
7DEC	S5A	EP	Z	6 53 47.1	403.2	.4	12.3	218	3.4
		ES	Y	56 25.7			14.4	228	1.7
7DEC	S4A	E	Z	6 53 53.5	121.0	.5	14.4	228	7.8
		ES	X	56 19.7			14.4	220	
		E	X	23.1			14.4	220	.9

7DEC	S4A	EP	Z	7 12 8.2	80.6	.2			
		E	X	14.9			L		
		E	Y	17.9			L		
7DEC	S4A	EP	Z	8 32 40.4					
		E	Z	41.4			N		
		E	Y	50.9			N		
		E	X	33 41.2			N		
7DEC	S1A	EP	X	8 32 57.0					
		ES	X	33 10.2			1.0		
							1.0		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
7DEC	S5A	EP	Z	9 31 46.2			4.3		
		ES	Z	32 39.7			4.6		
7DEC	S4A	EP	Z	9 31 52.1	48.1	.2	N		
		E	X	32 51.2			N		
7DEC	S4A	EP	Z	9 49 46.7	80.6	.1	.5		
		ES	X	54.0			.5		
7DEC	S1A	EP	Z	11 40 11.6			4.2		*
		ES	X	41 .6			4.2		
7DEC	S4A	EP	Z	11 40 36.4	121.0	.2	N		*
		E	Y	46.9			N		
		E	Y	41 42.4			N		
7DEC	S5A	EP	Z	11 40 46.0	161.3	.2	R		*
		ES	Z	42 .4			R		
7DEC	S5A	E	Z	13 39 28.9	887.1	.4			
7DEC	S5A	EP	Z	13 50 54.1			5.5		
		ES	Z	51 57.5			5.5		
7DEC	S1A	EP	Z	14 16 15.4			4.9		
		ES	X	17 11.4			4.9		
		E	P	21 16.6			4.9		
7DEC	S5A	EP	Z	14 16 45.9			1.5		
		ES	Y	17 4.6			1.5		
		E	Z	23 12.6			1.5		
7DEC	S1A	EP	Z	14 41 35.2			3.5		
		ES	X	42 16.3			3.5		
7DEC	S5A	EP	Z	14 42 17.3			5.0		
		ES	Z	43 14.5			5.0		
7DEC	S5A	EP	Z	15 14 25.5	121.0	.2	R		
		F	Z	34.6			R		
		ES	Y	15 41.1			R		
		E	Z	21 44.9			R		
		E	Z	57.8			R		
7DEC	S1A	EP	Z	15 15 2.0			R		
		ES	X	16 44.7			R		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
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7DEC 16 59 29.2 11.9N 142.6E S OF MARIANA IS  
H = 33 KM MAG = 5.1

7DEC	S5A	EP	P	17 5 54.4			32.1	194	-1.0
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7DEC	S7A	EP	Z	17 3 51.3	564.5	.3	.7		*
		ES	X	4 .6					
7DEC	S4A	EP	Z	17 3 59.5	201.6	.2	.7		*
		E	X	4 8.3			L		
		E	X	13.4			L		
7DEC	S5A	EP	Z	17 4 9.5	80.6	.2	L		
		ES	Y	33.5			2.0		*
7DEC	S1A	EP	Z	17 4 27.2			2.0		
		ES	X	5 19.8			4.5		*
							4.5		

7DEC 17 17 42.0 44.3N 151.7E KURILE IS REGION  
H = 26 KM MAG = 5.8

7DEC	S5A	EP	Z	17 18 5.1	999.9		1.4	49	-0.3
7DEC	S4A	-IP	X	17 18 21.7	999.9		2.3	99	2.3
7DEC	S1A	EP	Z	17 18 45.3	999.9		3.9	71	3.0

7DEC	S5A	E	Z	17 35 42.0					
		E	X	49.4					

7DEC	S5A	EP	Z	19 15 36.0			1.8		
		ES	Y	57.7			1.8		

8DEC	S4A	-IP	Z	0 44 1.0	999.9		L		*
		E	Z	12.8			L		
8DEC	S1A	EP	Z	0 44 10.6	403.2	.4	1.9		*
		ES	X	33.8			1.9		*
8DEC	S7A	EP	Z	0 44 12.3	483.9	.2	1.9		*
		ES	X	35.0			1.9		*
8DEC	S5A	EP	Z	0 44 17.8	1.5U	.2	2.2		*
		ES	Y	44.3			2.2		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
8 DEC	S5A	EP	Z	3 26 48.6			1.9		
		ES	Z	27 12.0			1.9		
8 DEC	S1A	EP	Z	5 47 1.1	201.6	.2	1.5		
		ES	X	20.3			1.5		
8 DEC	S5A	E	Y	5 48 14.0			L		
8 DEC	S4A	+IP	Z	5 51 20.2	999.9		L		*
8 DEC	S5A	EP	Z	5 51 22.8	5.4U	.2	L		*
		E	Y	24.9			L		
		E	P	52 32.1			L		
8 DEC	S1A	EP	Z	5 51 45.8	161.3	.1	2.4		*
		ES	X	52 15.0			2.4		
8 DEC	S1A	EP	Z	6 17 48.9	161.3	.1	.6		
		ES	X	57.0			.6		
8 DEC	S4A	EP	Z	6 24 52.6	80.6	.2	L		
		F	Y	54.6			L		
8 DEC	S7A	E	Z	9 28 59.7	201.6	.2			
8 DEC	S5A	EP	Z	9 31 40.3	201.6	.3	.5		
		ES	X	47.4			.5		
8 DEC	S4A	EP	Z	9 48 9.3	121.0	.3	4.1		*
		E	Y	21.3			4.1		
		ES	X	57.1			4.1		
8 DEC	S1A	EP	Z	9 48 19.6			5.1		*
		ES	X	49 18.8			5.1		
8 DEC	S5A	EP	Z	9 48 25.2	766.1	.3	5.4		*
		ES	Y	49 26.4			5.4		

DAY	STA	PHASE	C	TIME		AMP	PER	DIST	AZI	RES
8 DEC	S4A	EP	Z	13	2 48.9	999.9				
		E	X		49.6			.7		*
		ES	X		58.6			.7		
8 DEC	S5A	-IP	Z	13	3 .4	725.8	.3			*
8 DEC	S1A	EP	Z	13	3 4.2	121.0	.2	1.9		*
		ES	X		27.0			1.9		*
8 DEC	S7A	E	Z	13	3 4.9	241.9	.4			*

8 DEC 14 5 49.8 39.8N 141.4E HONSHU, JAPAN  
H = 73 KM MAG = 4.1

8 DEC	S1A	EP	Z	14	7 7.0	443.5	.3	5.1	230	1.6
8 DEC	S4A	EP	Z	14	7 34.6	121.0	.2	7.2	229	.1
		ES	Y		8 51.0			7.2	229	-4.7
8 DEC	S5A	EP	Z	14	7 40.2	362.9	.4	7.6	245	.6
		ES	Y		8 59.8			7.6	245	-5.3

8 DEC 15 2 59.4 56.1N 164.7E KOMANDORSKY IS REGION  
H = 33 KM MAG = 4.8

8 DEC	S4A	EP	Z	15	6 30.1	121.0	.6	15.3	36	-4.7
		E	Y		35.9			15.3	36	
		E	Y		47.3			15.3	36	
8 DEC	S5A	EP	Z	15	6 30.5	201.6	.3	15.7	31	-9.1
		E	Z		32.3	564	4	15.7	31	
		E	Z		9 12.4			15.7	31	
8 DEC	S1A	EP	Z	15	6 56.8	80.6	.2	17.4	36	-4.7
		E	X		7 19.2			17.4	36	

8 DEC	S5A	E	Z	15	22 31.1	483.9	.3			
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8 DEC	S1A	EP	Z	18	45 9.3			1.2		
		ES	X		25.1			1.2		

9 DEC	S4A	EP	Z	21	42 39.6			N		
		E	Z		44.8			N		
		E	Y		43 20.6			N		

8 DEC	S5A	E	Y	21	43 14.3					
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8 DEC	S1A	EP	Z	22	52 .5	564.5	.1	.5		
		ES	X		8.0			.5		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
8 DEC	S4A	EP	Z	22 52 24.8	201.6	.2	N		
		E	X	48.4			N		
8 DEC	S7A	EP	Z	23 28 32.9	403.2	.2	.5		
		ES	Y	38.6			.5		
8 DEC	S4A	EP	Z	23 28 46.0	121.0	.2	1.1		
		ES	X	29 .3			1.1		
9 DEC	S5A	E	Y	0 41 29.5					
9 DEC	S4A	EP	Z	1 20 23.5			1.1		
		E	X	32.0			1.1		
		ES	X	37.4			1.1		
9 DEC	S4A	EP	Z	2 45 47.9	999.9		L		*
		E	Y	49.9			L		
		E	X	55.7			L		
9 DEC	S5A	EP	Z	2 45 56.7	161.3	.2	1.0		*
		ES	Z	46 10.4			1.0		
9 DEC	S1A	EP	Z	2 46 13.4			2.3		*
		ES	X	41.4			2.3		
9 DEC	S4A	EP	Z	5 58 56.6	161.3	.1	2.6		*
		E	Y	59 5.9			2.6		
		ES	X	28.1			2.6		
9 DEC	S5A	EP	Z	5 58 58.3	833.3	.2	R		*
		E	P	59 5.5			R		
		ES	Y	6 0 35.0			R		
9 DEC	S1A	EP	Z	5 59 21.7			1.8		*
		ES	X	43.6			1.8		
		E	X	6 1 23.1			1.8		
9 DEC	S4A	EP	Z	6 16 32.6	201.6	.2	.8		
		ES	X	43.0			.8		



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
9DEC	S1A	EP	Z	7 46 27.1	121.0	.1	2.2		*
		ES	X	54.0			2.2		
9DEC	S4A	-IP	Z	7 47 3.4	999.9		L		*
		E	X	8.1			L		
9DEC	S5A	EP	Z	7 47 15.7	416.7	.2	1.4		*
		E	P	22.9			1.4		
		ES	Y	33.6			1.4		
9DEC	S1A	EP	Z	10 8 4.5			N		
		ES	X	10 38.5			N		
9DEC	S1A	EP	Z	12 20 57.3			.6		
		ES	X	21 6.2			.6		
9DEC	S5A	EP	Z	12 28 23.8	201.6	.2	.9		
		ES	Y	35.3			.9		
9DEC	S1A	EP	Z	12 39 56.1			4.7		
		ES	X	40 50.7			4.7		
9DEC	S5A	E	Z	12 41 49.8	282.3	.3			
9DEC	S1A	FP	Z	16 34 43.8			.5		
		ES	X	51.0			.5		
9DEC	S4A	EP	Z	16 48 26.6	282.3	.1	T		
9DEC	S1A	EP	Z	17 2 54.7	322.6	.2	4.4		
		ES	X	3 45.4			4.4		
9DEC	S5A	EP	Z	17 3 28.4	80.6	.2	R		
		ES	X	4 43.6			R		
9DEC	S1A	EP	Z	17 23 25.7			1.5		
		ES	Z	44.1			1.5		
9DEC	S5A	E	Z	19 51 15.1	967.7	.3			
9DEC	S1A	EP	Z	22 0 27.6			1.7		
		ES	X	49.0			1.7		
10DEC	S1A	EP	Z	0 10 43.4			2.1		
		ES	X	11 8.2			2.1		
10DEC	S5A	E	Z	0 12 6.4	645.2	.3			



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
10DEC	S7A	EP	Z	4 9 38.3			.5		
		ES	Y	44.8			.5		
10DEC	S4A	EP	Z	4 47 17.0			1.2		
		ES	X	32.6			1.2		
10DEC	S7A	EP	P	5 10 10.7			.9		
		ES	Y	22.2			.9		
10DEC	S1A	E	X	9 46 29.2					
10DEC	S1A	EP	Z	9 55 35.6			4.6		
		ES	X	56 28.5			4.6		
10DEC	S7A	EP	Z	15 31 53.5	999.9		.5		*
		ES	Z	32 .0			.5		
10DEC	S4A	EP	Z	15 32 .0	443.5	.3	.4		*
		ES	X	4.6			.4		
10DEC	S1A	EP	Z	15 32 29.8			3.8		*
		ES	X	33 14.4			3.8		
10DEC	S1A	EP	Z	16 21 42.1			.9		
		ES	X	54.2			.9		
10DEC	S1A	EP	Z	16 49 22.4			.7		
		ES	X	32.7			.7		
10DEC	S1A	E	Z	17 50 30.5					
10DEC	S1A	EP	Z	19 37 50.8			2.9		
		ES	X	38 25.2			2.9		
11DEC	S1A	E	Z	0 27 16.6					
11DEC	S7A	EP	Z	3 37 9.0			.8		
		ES	Y	19.5			.8		
11DEC	S1A	E	Z	4 6 18.8					
11DEC	S1A	EP	Z	6 9 40.7			2.4		
		ES	Z	10 9.7			2.4		
11DEC	S1A	EP	Z	6 32 28.1			.7		
		ES	Z	37.6			.7		

DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
11DEC	S1A	EP	Z	7 32 51.0	161.3	.2	.8		
		ES	X	33 1.4			.8		
11DEC	S7A	EP	Z	7 37 51.1			.7		
		ES	Y	38 1.0			.7		
11DEC	S1A	EP	Z	10 0 2.6					
11DEC	S4A	EP	Z	10 55 47.7	121.0	.4	2.0		
		ES	X	56 12.0			2.0		
11DEC	S1A	EP	Z	17 1 34.7	121.0	.2	.5		
		ES	X	41.9			.5		
11DEC	S1A	EP	Z	17 31 59.0			R		
		ES	X	33 50.1			R		
11DEC	S1A	EP	Z	18 27 2.6			.5		
		ES	X	10.0			.5		

11DEC 19 47 34.2 42.9N 144.6E HOKKAIDO, JAPAN REGION  
H = 57 KM MAG = 4.8

11DEC	S1A	EP	Z	19 48 .1	999.9		1.4	260	1.5
11DEC	S4A	EP	Z	19 48 25.3	999.9		3.4	239	-0.3
		E	Z	53.8			3.4	239	
		E	Z	49 1.4			3.4	239	

12DEC	S4A	EP	Z	1 18 47.9	282.3	.3	N		
		E	Z	50.7			N		
		E	Y	19 13.3			N		

12DEC	S1A	E	Z	1 19 17.0					
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12DEC	S1A	E	Z	2 0 52.1					
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12DEC	S4A	EP	Z	2 10 32.5	241.9	.2	L		
		E	X	36.0			L		
		E	X	39.3			L		

12DEC	S1A	E	Z	2 14 48.0	80.1	.2			
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12DEC	S1A	E	Z	2 18 42.3	48.1	.1			
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DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
12DEC	S1A	E	Z	2 20 43.3	48.1	.1			
12DEC	S4A	EP	Z	3 56 20.6	241.9	.3	L		
		E	Z	23.9			L		
		E	X	35.3			L		
12DEC	S1A	EP	Z	3 56 48.6			1.6		
		ES	X	57 8.3			1.6		
		E	X	58 25.2			1.6		
12DEC	S1A	EP	Z	4 34 50.3			1.7		
		ES	X	35 10.9			1.7		
12DEC	S4A	-IP	Z	5 51 23.9	999.9		.3		
		ES	X	29.4			.5		
12DEC	S1A	EP	Z	5 51 54.6			3.8		
		ES	X	52 38.6			3.8		
12DEC	S4A	EP	Z	6 41 17.9	564.5	.2	.7		
		ES	Y	27.9			.7		
12DEC	S1A	EP	Z	6 41 48.6			4.4		
		ES	X	42 39.8			4.4		
12DEC	S1A	EP	Z	10 37 35.6			1.3		
		ES	X	52.0			1.3		
		E	X	38 46.5			1.3		
12DEC	S1A	FP	Z	13 52 11.6	161.3	.3	1.6		
		ES	X	32.0			1.6		
12DEC	S1A	EP	Z	19 45 8.6			1.2		
		ES	X	23.8			1.2		
13DEC	S1A	E	Z	3 1 32.6	282.3	.1			
13DEC	S1A	E	Z	3 5 29.5	282.3	.2			
13DEC	S1A	E	Z	3 9 41.9	282.3	.2			
13DEC	S1A	E	Z	3 17 1.5	161.3	.2			
13DEC	S1A	E	Z	3 19 55.9					
13DEC	S1A	E	Z	3 24 41.7					
13DEC	S1A	E	Z	3 30 .8					
13DEC	S1A	E	Z	3 32 44.0					



DAY	STA	PHASE	C	TIME	AMP	PER	DIST	AZI	RES
13DEC	S1A	E	Z	3 42 52.1	443.5	.3			
13DEC	S1A	EP	Z	4 21 17.3			1.0		
		ES	X	29.9			1.0		
13DEC	S1A	EP	Z	5 2 45.3	201.6	.2	.9		
		ES	X	57.8			.9		



\*\*\*\*\* CBS PRELIMINARY BULLETIN COUNTS \*\*\*\*\*

NUMBER OF USCGS EPICENTERS ASSOCIATED WITH DATA *****	89
NUMBER OF STATION EVENTS ASSOCIATED WITH USCGS EPICENTERS *****	320
NUMBER OF OBS PRELIMINARY EPICENTERS ASSOCIATED WITH DATA *****	70
NUMBER OF STATION EVENTS ASSOCIATED WITH OBS PRELIMINARY EPICENTERS *	364
NUMBER OF KURILE EXPLOSIONS ASSOCIATED WITH DATA *****	17
NUMBER OF STATION EVENTS ASSOCIATED WITH KURILE EXPLOSIONS *****	87
TOTAL NUMBER OF EVENTS ASSOCIATED WITH DATA *****	176
NUMBER OF STATION EVENTS ASSOCIATED WITH TOTAL NUMBER OF EVENTS *****	771
NUMBER OF ASSUMED ASSOCIATED EVENTS USING OBS DATA *****	200
NUMBER OF STATION EVENTS ASSOCIATED WITH ASSUMED ASSOCIATED EVENTS **	741
TOTAL NUMBER OF EVENTS AND ASSUMED ASSOCIATED EVENTS *****	376
NUMBER OF STATION EVENTS ASSOCIATED WITH TOTAL NUMBER OF EVENTS *****	1512
TOTAL NUMBER OF UNASSOCIATED STATION EVENTS *****	1676
TOTAL NUMBER OF STATION EVENTS IN OBS PRELIMINARY DATA*****	3188

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OCEAN-BOTTOM SEISMOGRAPHIC EXPERIMENTS

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The Pentagon, Washington DC 20301

## 13. ABSTRACT

An Ocean-Bottom Seismograph Field Experiment was conducted in the Kurile Islands region between 21 October 1966 and 16 December 1966 (Ocean-Bottom Seismographic Experiments, Contract No. F 33657-67-C-0105). Preliminary data recorded during the experiment is presented. Data includes USC&GS reported events, preliminary OBS epicenter determinations and unassociated phases.

14.

## KEY WORDS

## LINK A

## LINK B

## LINK C

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Preliminary Bulletin  
Kurile Islands Experiments  
USC&GS Reported Events  
Preliminary Epicenter Determinations (OBS)

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**SUPPLEMENTARY**

**INFORMATION**



AD-822396

ADDENDUM  
TO  
PRELIMINARY BULLETIN  
KURILE ISLANDS EXPERIMENT  
OCEAN-BOTTOM SEISMOGRAPHIC EXPERIMENTS  
BY  
TEXAS INSTRUMENTS INCORPORATED  
Science Services Division  
P. O. Box 5621  
Dallas, Texas 75222

1 May 1967

Correction to Earth Displacement Values

Refer to Page IV-4, Paragraph f, and Bulletin Listings.

The earth displacement reported in the Bulletin Listings should be corrected by dividing the values given by the following factors:

<u>Period-Seconds</u>	<u>Frequency-Hz</u>	<u>Factor</u>
0.1	10	4.3
0.2	5	6.28
0.3	3.3	6.28
0.4	2.5	5.86
0.5	2.0	5.45
0.6	1.6	4.05
0.7	1.4	3.48
0.8	1.25	2.35
0.9	1.1	1.46
1.0	1.0	1.02
1.1	0.9	.73
1.2	0.88	.61
1.3	0.77	.41
1.4	0.72	.31

A detailed explanation of the OBS System Response will be given in a report to be published early in 1968 under the AF Contract No. F 33657 - 67 - C - 1341.